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## GREAT BRITAIN.

1. Transactions of the Royal Medical and Chirurgical Society. 20 Hanover-square, London, W. London: Longmans.
2. The Edinburgh Medical Journal. Oliver and Boyd.
3. The Retrospect of Medicine. Edited by James Braithwaite. Simpkin, Marshall, and Co.
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17. The Medical Chronicle.
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## *List of Exchange Journals.*

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53. *Revue de Laryngologie, d'Otologie, et de Rhinologie.* Paris: Octave Doin.
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3. De l'Empyème du Sinus Sphénoïdal. Un cas d'Angiokératomie de la Corde vocale droite. Par le Dr. E. J. Moure. Reprint. 1894. Pp. 23. Paris-Bordeaux: O. Doin et Feret et Fils.
4. Laparo-Hysterotomy: its indications and technique. By N. Senn, Ph.D., LL.D. Reprint. New York. 1893. Pp. 13.
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10. Total Extirpation of the Uterus. By George M. Edebohls, A.M., M.D. Reprint. Pp. 24. 1892.
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18. Syphilis in the Innocent (Syphilis Insontium). By L. Duncan Bulkley, A.M., M.D. New York: Bailey & Fairchild. 1894. 8vo. Pp. 398.
19. Eighth Annual Report of Hollo-way Sanatorium for the year 1893. London: John Barker & Co. 1894. 8vo. Pp. 68.
20. The Pharmaceutical Journal of Australasia. Vol. VII. No. 2. Sydney, February 28, 1894. (Three copies.)
21. Blätter für klinische Hydrotherapeutie. IV. Jahrgang. Nr. 3-4. Wien, März-April, 1894
22. The Journal of the British Dental Association. Vol. XV. Nos. 3 and 4. March and April, 1894.
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24. On the Features which distinguish Epidemic Roseola (Roserash) from Measles and from Scarlet Fever. By Clement Dukes, M.D., B.S., Lond. London: J. & A. Churchill. 1894. 8vo. Pp. 39.
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26. International Medical Magazine. Vol. III. Nos. 2 and 3. March and April, 1894. Philadelphia, Pa.
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28. The Medical Magazine. Vol. II. No. 10. April, 1894. London: Southwood, Smith & Co.
29. Bulletin of the Johns Hopkins Hospital. Vol. V. No. 38. Baltimore, March, 1894.
30. The Universal Medical Journal. Vol. VIII. Philadelphia, March, 1894. The F. A. Davis Co.

*Books, Pamphlets, and Periodicals received—(continued).*

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32. Abstracts of the foregoing in English, French, German, and Italian. London: John Bale & Sons. 1894. Pp. 10.

33. The Johns Hopkins Hospital Reports. Vol. IV. No. 1. Report on Typhoid Fever. Baltimore: The Johns Hopkins Press. 1894. Pp. 167.

34. Primer Congreso Médico-farmacéutico Regional celebrado en Valencia del 26 al 31 de Julio de 1891. Actas y detalles publicados bajo la dirección del Dr. Faustino Barbará. Valencia: F. Domenech. 1894. 8vo. Pp. 720.

35. Les Nouveaux Remèdes Dixième Année. Nos. 6 et 7. Paris: O. Doin. 1894.

36. Ontario Medical Journal. Vol. II. No. 7. Toronto, February, 1894.

37. Annales de la Policlinique de Bordeaux. Tome III., Fascicule 5. No. 19. Mars, 1894. Bordeaux: Feret et fils.

38. The Canadian Practitioner. Vol. XIX. No. 3. March, 1894. Toronto: The J. E. Bryant Company.

39. The Citizen. Saturday, March 31, 1894.

40. Le Salies de Béarn. Première Année. No. 42. Jeudi, 29 Mars, 1894.

41. The Medical Pioneer. Vol. II. No. 7. April, 1894.

42. De l'Éclairage des Cavités de la Face. Par le Dr. Maurice A'Court Tucker. Paris: G. Steinheil. 1894. 8vo. Pp. 48.

43. Teratologia: Quarterly Contributions to Antenatal Pathology. By J. W. Ballantyne, M.D., F.R.C.P.E., F.R.S.E. No. 1. April, 1894. London: Williams & Norgate. Pp. 60.

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49. The Human Element in Sex. By Dr. Elizabeth Blackwell. London: J. & A. Churchill. 1894. New Edition. Pp. 76.

50. Royal University of Ireland. The Calendar for the year 1894. Dublin: Alex. Thom & Co. 1894. 8vo. Pp. 445.

51. The Nature of the Germicidal Constituent of Blood-Serum. By Victor C. Vaughan, M.D., Ph.D., and Charles T. McClintock, Ph.D. 1893. Reprint. Pp. 22.

52. Memorandum on the Opium Question. By Patrick Hehir, M.D., Surgeon-Captain, Bombay Army. Hyderabad-Deccan, India. February, 1894.

53. Lunatic Asylums: their organization and management. By Charles Mercier, M.B. London: Charles Griffin & Co. 1894. 8vo. Pp. 300.

54. Difficult Labour. By G. Ernest Herman, M.B. Lond., F.R.C.P. London: Cassell & Co. 1894. 8vo. Pp. 443.

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56. On Seborrhœa and its consequences. By Joseph Frank Payne, M.D., F.R.C.P. London: John Bale & Sons. 1894. Pp. 23.



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RECENT COMMENT  
ON FEEDING WITH  
**Thyroid Gland "Tabloids."**

**I**N the February number of the EDINBURGH MEDICAL JOURNAL the transactions of the Chirurgical Society of Edinburgh contain a paper by Dr. Byrom Bramwell on a case of Psoriasis treated by Thyroid feeding. The patient, a girl aged seventeen, had suffered from the disease for two and a half months before coming under Dr. Bramwell's care on 7th September, 1893, and had been treated for six weeks in the Infirmary by a variety of external and internal remedies without any improvement taking place. From 13th September to 14th October a thyroid **extract** was administered in 5, 10, 15 and 20 minim doses (on the 13th, 20th, 27th September, and 5th October), the result was distinct, but not marked, improvement. On 14th October **another brand of extract** was substituted for the first (which had run short), in 1, 2, 3, 4 and 5 drachm doses, the 5 drachm dose (said to be equal to  $\frac{5}{8}$  of a gland) being continued from the 8th to the 25th November. The second brand of **extract** brought about slow improvement; but it seemed to come to a standstill about the 14th November, and many new patches of eruption developed on the scalp. On the 20th November the patient was placed for four days on milk diet, and a dose of Cascara ordered each night, for the bowels had been constipated. The milk diet was continued till, on 25th November, Burroughs, Wellcome & Co. "Tabloids" of the whole gland were substituted for the liquid extract, and immediately afterwards a notable improvement was apparent. One, two, three, four, and finally five "Tabloids" were given daily. On the 20th December, when the patient was shown to the Society, an immense improvement had taken place. On the 15th January she was quite well, the skin being beautifully soft and healthy all over the body. (The patient was shown to the Society on 17th January. Photographs showing the appearance of the patient before treatment were exhibited at the meeting.)

The question of "Tabloids" of Thyroid Gland *versus* Uncertain Extracts is thus well answered.

---

*Thyroid Gland "Tabloids" supplied to the Medical Profession by all Chemists  
in bottles of 100, at 2s. per bottle.*

---

**BURROUGHS, WELLCOME & CO.,** Manufacturing Chemists,  
Snow Hill Buildings, London.

*Cable and Telegraphic Address—"Burcome, London."*

# THE DUBLIN JOURNAL

OF

## MEDICAL SCIENCE.

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MAY 1, 1894.

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### PART I.

### ORIGINAL COMMUNICATIONS.

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ART. XIV.—*Arithmetic, Geometric, Harmonic, and Quadratic Means.* By SIR CHARLES A. CAMERON, F.R.C.S.I., &c.

It is frequently necessary in making a series of medical or other observations, to the results of which a numerical value can be assigned, to deduce a mean value for the whole series of observations, and to draw conclusions, one way or the other, based on this mean value of the series.

As the accuracy of the conclusions drawn depends in a very great measure on the accuracy of the observations, and on these again depend the mean value deduced, I shall point out those instances in which the application of this method is suited to the case under observation, and, when suited, the *modus operandi*, and the precautions to be taken in order to avoid error as much as possible.

In the first place, there are some statements of mean value from which no conclusions of any value can be drawn—as when, for example, it is stated that the average age of two persons is 40. Here the age of the younger may be any number of years from 1 to 40, and of the older from 79 to 40. All that we are sure of in this case is that one, at least, of the persons is 40 or more. So

when there is a great divergence in the numbers, the average of which is being sought, so much the less must there be confidence placed in the mean value of these numbers.

To take another example—two parties of riflemen, consisting of three in each party compete; the one party scores 84, and the other 79. What conclusions can be justly drawn in this instance? Only one, from the amount of information thus supplied—viz., that the total scored by one party exceeded that scored by the other, the obvious conclusion; but there is no information as to the individual scores, and we are not justified in saying that there were better riflemen in the winning party than in the other, as these totals may have been made up as follow:—

$$84 = 30 + 28 + 26 \quad \text{and} \quad 79 = 35 + 33 + 11.$$

It is obvious that were the mean values given in each of these instances—viz., 1st party, 28; 2nd party, 26·3—no more information could be gained respecting the individual competitors than is given by the totals.

There is another case which occurs sometimes in the comparison of two series of observations, which may be illustrated by reference to two series of researches published by Boecker.<sup>a</sup> He gave to an individual, whose diet was in other respects exactly estimated, a certain quantity of sarsaparilla daily, and found that the quantities of urine passed were in cubic centimetres as follow:—

|      |      |      |      |      |      |
|------|------|------|------|------|------|
| 1467 | 1744 | 1665 | 1220 | 1161 | 1369 |
| 1675 | 2129 | 887  | 1643 | 934  | 2093 |

During a second series of 12 days the individual experimented on took, instead of the decoction of sarsaparilla, his dietary remaining the same, as much distilled water, when the quantities of urine were as follow:—

|      |      |      |      |      |      |
|------|------|------|------|------|------|
| 1263 | 1740 | 1538 | 1526 | 1387 | 1422 |
| 1754 | 1320 | 1809 | 2139 | 1574 | 1114 |

These numbers are assumed to represent accurately the quantity of urine excreted by the individual. The question that arises, therefore, is—has the decoction of sarsaparilla influenced the excretion of urine or not; and, if it have, whether to increase or diminish that excretion? Upon examining each series of numbers separately it may be noticed that there are very great fluctuations in the numbers themselves. There does not appear to be any steadily augmenting or diminishing agency at work influencing

<sup>a</sup> See Reil's *Journal für Pharmacodynamick und Toxicologie*. Vol. II., Parts I. and II. "On the Action of Sarsaparilla."



the excretion of the urine; but the numbers registered on each succeeding day may be either greater or less than on the previous. Under such circumstances great caution must be exercised in accepting the mean values of the two series as at all representing the influence of the application of the sarsaparilla or its withdrawal. This doubt as to the means taken by themselves, representing the true influence of the sarsaparilla, is increased when it is found that if the means be taken for the first eight days of each series they are negatived by the respective means of the whole twelve of each series; and that if we suppose the numbers obtained on the thirteenth day to be the same as those obtained on the twelfth, the relation of the two series to one another is again reversed. Such a result as this might have been expected from the first, when it was seen that there was no appreciable relation existing between the numbers registered on each succeeding day; and, therefore, the inference to be drawn in this case is that whatever the influence of the sarsaparilla might have been, its influence was so much counteracted or otherwise by other agencies at work as to render it impossible to draw any inference in the case under observation.

So far the examples given have been those in which the application of the arithmetic mean has not been suited to the case chosen, or only partially; but there are a great many cases in which, when used with caution, the arithmetic mean, or pure average, is a valuable adjunct in experimental research. Take one or two instances in which it is only possible to express a general result by giving the average of a long series of observations, and be it borne in mind that the more extended the series of observations the nearer we approach to a mean value, from which there is little or no divergence.

It is stated that the annual rainfall in the Thames basin is 26 inches. Now by this statement it is neither meant that 26 inches of rain fell on every portion of the floor of the basin, nor that the amount of rain which falls each year over this area is invariably the same. By this statement is meant, that if the total amount of rain which has fallen during many years on the portion of England drained by the Thames and its tributary streams had accumulated, none of it being lost by evaporation or percolation through the soil, and if the number representing the height at which that water would stand, supposing the whole area to be level, were divided by the number of years during which the

observations had been made, then we should find that each division would be represented by a height of 26 inches. It is obvious that this method represents to the mind in the most concise manner the general character of the rainfall over this area, and that it also furnishes a ready and sufficiently accurate estimate upon which other calculations of a cognate character may be based.

So much having been said on the value of the arithmetic mean, when judiciously employed, it is as well to state now that besides the arithmetic mean there are various other means—such as the geometric, harmonic, and quadratic means; and perhaps the simplest method of explaining to the non-mathematical reader the differences that exist between each of these means will be to indicate the methods by which they can be discovered. Let it be required to find the arithmetic mean of the numbers 3, 6, 9, 4, 13. In order to do this these numbers must be added together, and the sum divided by the number of addenda, as, total of the numbers, 35, which divided by the number of addenda (5) is equal to 7. Seven is, therefore, the arithmetic mean of the numbers 3, 6, 9, 4, 13.

It will be seen that the mean relation that 7 bears to these numbers may be exemplified by showing that, if all the numbers less than 7, as 3, 6, 4, be subtracted from 7, and the remainders be added together, the sum of the remainders obtained will be equal to the sum of the remainders obtained when 7 is subtracted from each of the numbers greater than itself, as 9, 13. Thus,  $4 + 1 + 3 = 2 + 6$ . Therefore 7 bears a mean relation to the numbers 3, 6, 9, 4, 13.

Let it be required to find the geometrical mean of the numbers 3 and 12. To do this the numbers are to be multiplied together, and such a root extracted as is indicated by the number of separate multipliers, as  $\sqrt{12 \times 3} = \sqrt{36} = 6$ . This operation may be expressed in more general terms by stating—If  $n$  represents the number of individual factors, the geometric mean of which is required, the  $n^{\text{th}}$  root of the product of these factors is the geometric mean of the factors.

In order to show that 6 bears a mean relation to 12 and 3 it is necessary to show that 3 bears the same ratio to 6 as 6 does to 12.

$$3 = \frac{6}{2}, \quad 6 = \frac{12}{2}; \quad \text{or,} \quad \frac{3}{6} = \frac{6}{12} = \frac{1}{2};$$

or again, 6 is the double of 3, as 12 is the double of 6; or still

again, 6 is as many times greater than 3 as 12 is greater than 6. Therefore 6 holds a mean ratio between 3 and 12.

$\frac{3}{12}$  represents the ratio of 3 to 12,

$\frac{12}{3}$            "                       "           12 to 3,

and  $\frac{6}{6}=1$  is the geometric mean of these.

Let us take into consideration the geometric mean of three numbers—for instance, 4, 6, 9. The geometric mean

$$= \sqrt[3]{4 \times 6 \times 9} = \sqrt[3]{216} = 6.$$

It so happens in this instance that the geometric mean of the three numbers is one of them—that one which bears the same relation to the first that the last, or greatest, does to it. But does it always happen that the geometric mean of three or more numbers holds an intermediate position between the greatest and least numbers in the series? Let us consider this point. As the extraction of a root is a kind of converse operation to that of the multiplication of the factors, from which the product has been obtained, and as the root is always such a number as, when multiplied as many times by itself as is indicated by the index of the root, will produce the product, it follows that the root must always be some one number, which, when multiplied a certain number of times by itself, will produce the number from which it has been extracted—or, in other words, the number obtained by the multiplication of the several factors. But as these factors may vary greatly in magnitude among themselves, and the root can be only a single number, it follows that this single number must be greater than the smallest factor, and less than the greatest; indeed, that it must hold an intermediate position amongst all the factors. If there be many large factors, the larger the mean will be; if there be more factors small numbers than the number of the large factors, the smaller the mean will be. This will probably be better illustrated by taking an example. The geometric mean of 4, 6, 9 is 6—*i.e.*, if we take the product of  $4 \times 6 \times 9$  and extract the cube root we obtain 6. Now, if we take the product of  $4 \times 7 \times 9$  we evidently obtain a greater product, and the cube root will in consequence be greater—*i.e.*, nearer to 9. If, on the other hand, we take the product of  $4 \times 5 \times 9$  we evidently obtain a smaller product, and, on the extraction of the cube root,

a smaller number, or one nearer to 4; but we could never obtain 4 unless all the numbers were 4—*i.e.*,  $4 \times 4 \times 4$ —and we could never obtain 9 unless all the numbers were 9—*i.e.*,  $9 \times 9 \times 9$ ; and the greater the other numbers are the greater will be the geometric mean, and the less the less. Therefore the geometric mean must always hold a mean position in any series of numbers.

The geometric mean cannot differ, therefore, much from the arithmetic mean, and this may be easily seen by reference to the numbers 4, 6, 9, the arithmetic mean of which is  $6\frac{1}{3}$ , while, as already stated, its geometric mean is 6.

Few words only are required in explanation of the harmonic mean, as its application is inappropriate in the cases of which we are taking cognizance; but as we are discussing means we may as well refer to this one also.

Whenever the product of two numbers is unity these numbers are said to be reciprocally related to each other, or reciprocals; or, more concisely, it may be stated that the reciprocal value of a number may be found by dividing unity by that number. Thus a number, unity, and the reciprocal of that number are in geometric progression, while the reciprocals of numbers in harmonic progression are in arithmetic progression. The harmonic mean may, therefore, be found for a series of numbers by taking the reciprocal value of the arithmetic mean of the reciprocals of those numbers. To take an example—let it be required to find the harmonic mean of 3 and 12. The reciprocal values of these numbers are  $\frac{1}{3}$  and  $\frac{1}{12}$ , and the arithmetic mean of  $\frac{1}{3}$  and  $\frac{1}{12}$  equals  $\frac{\frac{1}{3} + \frac{1}{12}}{2} = \frac{4+1}{24} = \frac{5}{24}$ , and the reciprocal of  $\frac{5}{24} = \frac{24}{5} = 4\frac{4}{5}$ . Therefore,  $4\frac{4}{5}$  is the harmonic mean of 3 and 12.

A fourth mean is the quadratic mean. This mean may be defined as equivalent to the square root of the arithmetic mean of the squares of the given numbers, and may be found in the following manner:—

Let it be required to find the quadratic mean of 3 and 12. According to the definition the quadratic mean of 3 and 12 is equivalent to the square root of the arithmetic mean of the squares of the given numbers—that is, the mean of  $3^2$  and  $12^2$ .  $3^2 = 9$ ,  $12^2 = 144$ ;  $144 + 9 = 153$ , and the arithmetic mean is equal to  $\frac{153}{2} = 76\cdot5$ , the square root of which is  $8\cdot75$ .

It will be fitting to institute in this place a comparison between



the arithmetic and quadratic means, and to point out those cases in which the application of one is preferable to that of the other.

The arithmetic mean of 3 and 12 is  $7\frac{1}{2}$ .

„ „ „ 3, 9, 8 is  $6\frac{2}{3}$ .

„ quadratic „ 3 and 12 is  $8.75 = 8\frac{3}{4}$ .

„ „ „ 3, 9, 8 is  $7.16$ .

It will be seen that in each of these examples the quadratic exceeds the arithmetic mean; and it may here be remarked that it can be exactly and mathematically demonstrated that the quadratic always to a certain extent exceeds the arithmetic mean, and that this excess is in proportion to the inequality of the given numbers. The nearer the given numbers approach equality the nearer does the quadratic mean converge to the arithmetic mean; and the greater the inequality of the numbers the greater the difference between the two means; and when the given numbers arrive at equality the two means are identical.

We will turn this peculiarity of the quadratic mean (which, however, is also shared in by the geometric and harmonic means) to use in the estimation of what may be called the probable error in a series of estimations of the value of a definite fixed quantity—such, for instance, as the percentage of carbon in a given substance.

It is well known to chemists that, however cautious and experienced they may be, and however accurate be the balances employed by them, in quantitative analysis there is always some error in their weighing, be that error small or great; and that when an estimate of great nicety has to be made it is necessary to frequently repeat the experiment, and on some occasions to employ various methods of analysis. It will be the object of this paragraph to point out a method of estimating the mean error in a series of observations.

One of the best methods is by what is called “the method of successive means.” A large number of determinations having been made, in which it is presumed that the error is as likely to be on the one side of the normal as on the other, and that those on one side are as nearly equal as possible to those on the other, we take the means successively of the first two numbers, then of the first three, first four, and so on, in each case, to about four places of decimals, when we shall find that the successive means will coincide in their whole numbers, but that they will differ in their first decimal place. By continuing the process far enough the

first decimal will agree, then the first two, then the first three, and ultimately the first four; but the observations should have been carried out to many hundreds in order to secure this result. As an example of this we will take a series of numbers from a paper by W. Kaupp, "On the Dependence of the Amount of Chloride of Sodium in the Urine upon that in the Food." The series is as follows:—

|        |        |        |        |        |        |
|--------|--------|--------|--------|--------|--------|
| 24·300 | 24·173 | 23·340 | 23·600 | 26·057 | 23·101 |
| 24·511 | 23·343 | 26·400 | 22·650 | 23·590 | 23·644 |

Although this is not a case of the measurement of a definite fixed quantity, it will furnish us with an example of the accuracy of the mean as indicating the probable value of a fixed quantity. By taking the successive means we get—

|                                 |         |
|---------------------------------|---------|
| As the mean of the first 2 days | 24·2365 |
| "              "      3      "  | 23·9377 |
| "              "      4      "  | 23·8533 |
| "              "      5      "  | 24·2940 |
| "              "      6      "  | 24·0950 |
| "              "      7      "  | 24·1544 |
| "              "      8      "  | 24·0530 |
| "              "      9      "  | 24·3138 |
| "              "     10     "   | 24·1474 |
| "              "     11     "   | 24·0967 |
| "              "     12     "   | 24·0590 |

It will be seen that after the third mean all those following agree in the whole number, 24. This number may be taken as certain. The numbers differ in their decimals, but in no place is the difference greater than ·4. We may, therefore, assume that the mean lies between  $24 + \cdot 4$  and  $24 - \cdot 4$ ; i.e., if we take 24 as the round number the limit of uncertainty will be ·4. Taking the arithmetic mean of the first decimals as the basis for a general mean, the successive means, leaving out all but first decimals, are 24·2, 23·9, 23·9, 24·3, 24·1, 24·2, 24·1, 24·3, 24·1, 24·1, 24·1, consequently the arithmetic mean of the series = 24·1, and the greatest divergence from 24·1 is only ·3; 24·1 is the value of the mean, with an uncertainty = ·3.

ART. XV.—*On the Treatment of the Pulps of Teeth with Sublimate.*<sup>a</sup> By ARTHUR W. W. BAKER, M.D., F.R.C.S.I.;  
University Examiner in Dental Surgery.

IT may, perhaps, be familiar to members of this Club that it is frequently necessary in dental practice, in order to save teeth, to devitalise the nerve, or tooth pulp, as it is more correctly termed. The drug we most frequently employ for this purpose is some preparation of arsenious acid ( $\text{As}_2\text{O}_3$ ). The preparation which I generally use is arsenic made into a paste with creasote and a little morphia.

At subsequent visits the devitalised pulp is removed with small barbed broaches, while the root canal is rendered aseptic and filled. Under these circumstances, although the pulp is removed the root is not dead, as it still maintains its connection with the root membrane, and may be retained for a considerable period as a useful organ.

While such a method of treatment as I have mentioned is comparatively easy to carry out, as far as regards teeth with single roots, such as we have in the front of the mouth, it is not quite so simple when we come to deal with the bicuspid, and its difficulty increases in direct ratio as we approach cavities situated on the distal surface of the wisdom tooth, and as we are called upon to treat the pulp in the buccal roots of upper molars and the anterior roots of lower molars.

Consequently, dentists have for some time been experimenting in the direction of finding some substance which, when applied to the pulp, would embalm it, and at the same time leave it *in situ*, as the most perfect root-filling. I may mention that under ordinary conditions if devitalised pulp is left in the root of a tooth it sooner or later becomes septic, and suppuration follows in the root membrane.

In the August number of the *Dental Cosmos* for 1890, Professor Miller, of Berlin, published an interesting series of experiments, conducted with the object of determining what antiseptic was the most suitable for the purpose of preventing decomposition of the pulp. He employed for his experiments the pulps of calves' teeth, which he introduced into small glass tubes open at both ends, one

<sup>a</sup> Read before the Dublin Biological Club, March 6, 1894.

end being drawn to a point—in short, there was a glass tooth in which the whole process could be observed. The pulp in this glass tooth was then infected at one or both ends, the antiseptic to be tested placed in the larger end in contact with the pulp, covered lightly with a little plug of cotton, sealed with wax, and dropped into a test tube partly filled with agar, the small tube being allowed to penetrate a short distance into the agar. The test tube was then plugged with cotton, capped with a rubber cap, and placed in an incubator. In this way the penetrating power of the antiseptic could be easily seen. After a certain time these pulps were removed from their tubes, placed on plates of agar, and the development of bacteria noted.

In this way, up to August, 1890, Professor Miller had made 393 separate experiments, in which he tested the action of chloride of lime, oil of wintergreen, oil of peppermint, oil of cinnamon, chloride of zinc, iodoform, borax, boric acid, salicylic acid, benzoic acid, thymol, carbolic acid, chlorphenol,  $\alpha$ - and  $\beta$ -naphthol, hydro-naphthol, campho-phenique, soziodol, Lyster's new antiseptic, sulphate of copper, iodol, sulphocarbonate of zinc, cyanide of mercury, resorcin, and many other antiseptics of more or less repute.

When at the International Medical Congress in Berlin my friend, Professor Miller, kindly showed me some of his experiments then in progress in his laboratory at the Dental Institute. Believing that this method of treating pulps was likely to be of use in certain cases, I determined to try the perchloride of mercury in practice, it being the drug which seemed to offer most chance of success. The cases which, in my opinion, justify this method of treatment are those—

1st. In which it would be impossible to reach the roots without removing so much of the tooth as to materially weaken the organ and render it liable to be broke in mastication.

2nd. Where the removal of the root pulp would cause the patient an amount of pain out of proportion to the value of the tooth.

3rd. In hospital cases, where the ordinary operation of filling roots is rendered impossible by the patient being unable to attend sufficiently often.

With regard to the cases in which I have tried this method of treating pulps I have notes of 25 consecutive cases, ranging over the first ten months of 1891. As I have been unable to trace



the further history of four of these cases I have not included them in the table which I have drawn up.

The method adopted was—in the first place to devitalise the pulp with arsenic. This was done in all cases but one, to which I shall refer later. At the next visit the arsenic was removed and the cavity prepared for filling. On the devitalised pulp were placed a few crystals of sublimate, covered with a little pledget of cotton soaked in alcohol, sealed with oxyphosphate of zinc cement, and the remainder of the cavity filled in with amalgam or cement.

The 21 cases which I have tabulated vary in age from 14 to 50—of these 7 were males and 14 females. The teeth treated comprise 9 bicuspid and 12 molars—of these teeth 15 were in the lower jaw and 6 in the upper. In 13 of these cases I have been able to verify their actual condition by personal observation, but in 8 I have had to rely on replies by letter to the following questions:—

1. Have you had any pain which you were able distinctly to refer to this tooth?

2. Has any swelling or gumboil formed close to its root?

3. Does it present any appreciable difference in colour to its neighbours?

In these cases I have been able to ascertain their subsequent history at periods varying—

Between 5 and 12 months in 12 cases.

|   |   |   |   |       |   |   |   |
|---|---|---|---|-------|---|---|---|
| „ | 1 | „ | 2 | years | „ | 5 | „ |
| „ | 2 | „ | 3 | „     | „ | 4 | „ |

These records show that of the 21 cases 17 were successful—that is to say, that the tooth was perfectly comfortable, and that there was no evidence of the patient having had any inflammation about the root when last observed. Although of these cases which I think I may fairly claim as successful I was not able to observe 7 for periods longer than from 7 to 12 months, still, viewing them in the light of the cases I have been able to observe for a longer period, if inflammation were likely to occur about the root there would have been some evidence of it during the period when they were under observation.

Of the three cases in which there has been slight periodontitis it has never amounted to more than temporary inconvenience, not preventing the use of the tooth at other times, and is a condition which sometimes follows the more usual method of root-treatment. In one of these three cases I may remark that the patient had had

an attack of periodontitis prior to my treatment, which, of course, would render its recurrence extremely probable.

The application of the perchloride of mercury to a pulp is said to cause a good deal of pain for a short time. I have only observed slight pain in two cases. This absence of pain was rather striking in one case where I applied sublimate, without a previous application of arsenic. The patient was a young soldier, who came to me in a good deal of pain with a lower molar. In removing the decay I accidentally exposed the pulp, which revealed a minute abscess of the anterior cornu. I at once applied sublimate to the pulp, and filled the tooth; he returned the next day, saying he was perfectly comfortable. Thirteen months later he wrote to me saying that the tooth, while of an ashy grey colour, had always remained comfortable.

The colour which the tooth that has been treated with sublimate assumes is decidedly objectionable; but as this method is only used towards the back of the mouth, where appearance is of less consequence, and when it becomes a question between discoloration and losing the tooth, I think we may fairly put aside æsthetic considerations.

One case, however, was a complete failure; at the same time this case is so instructive, showing what takes place when there is no antiseptic in contact with the pulp, that I may be excused if I inflict on you its history:—

CASE.—In November, 1891, a medical friend came to me with an inflamed pulp in a left lower first molar; the cavity was situated at the distal surface of the tooth. I applied arsenic, and sent him away. The application of arsenic caused a considerable amount of pain for some hours—in fact, he said it was the worst pain he had ever suffered. Subsequently I treated this pulp with crystals of sublimate, covered with a little plug of cotton, sealed the pulp chamber with cement, and filled in with amalgam. This tooth was never quite comfortable, the patient constantly complained of a certain amount of inflammation in the root membrane, so that five months later I was obliged to remove the tooth, as the patient had a severe attack of throbbing pain, which, combined with tenderness on pressure over the root, indicated commencing apical abscess.

Dr. Ball kindly gave gas, and I removed the tooth. On examining the tooth I found the filling perfect in every respect; there was a patch of inflamed root membrane on the posterior root, but no evidence of pus. The tooth was of a greyish colour, but darker as regards the posterior

root. I washed it in water and placed it in sublimate lotion for a short time. I then split the tooth with a sterilised forceps, holding it in sterilised bibulous paper, and found that the lower two-thirds of each root contained pulp alive and deeply injected, while the upper third of each root and the pulp chamber contained pulp in a condition of black moist gangrene, having its characteristic odour.

From the contents of the pulp chamber I made plate, line, and stick cultures on both gelatine and agar, also potato cultures; the result gave an almost pure culture of *staphylococcus cereus albus* (of which there is an impression preparation under the microscope). The conclusion that I came to from the examination of this tooth was, that in my anxiety to place as small a quantity of sublimate as possible in the tooth I had put in almost none, or that it possibly got displaced in filling the tooth. My experience in this case pointed forcibly to the fact that crystals of sublimate were difficult to manipulate successfully in awkwardly situated cavities, and that some more convenient form of the salt must be found; also that the question of the dose necessary to permeate the pulp must be determined. With these two objects in view I repeated Professor Miller's experiments on a small scale.

For purposes of experiment I procured the lower jaw of a calf, or, more properly, what is known in the trade as a beast—that is, an animal with the first permanent molar lately erupted—the molar pulp, consisting of four or five separate lobes, each practically a pulp complete in itself, being very convenient for this sort of work. For the little glass tubes in which they were placed I am indebted to my friend, Dr. Piel, who kindly manufactured an abundant supply. The pulps were introduced with a thread into the small tubes, infected from a mixture of recently extracted teeth in water, through the larger opening of the tube, treated or not with sublimate, covered with a little ball of wool, sealed with wax, and dropped into a tube of agar, as I have already described.

In these experiments I tried the effect of a paste composed of 5 grammes of sublimate, a little gum tragacanth, and a few drops of glycerine.

I took five tubes containing pulps all infected. To No. 1, which was the control tube, no sublimate was added; it was placed in the incubator standing at 35°C., and at 10 and 24 hours later respectively its appearance was unchanged, being red and vascular. At the end of a week the agar in the test tube was partly lique-

fied, the cotton wool in the small tube nearly black, and the pulp itself gangrenous and foul-smelling. It was transferred to a plate of agar, and again placed in the incubator. At the end of two days colonies of various sorts had developed all round, while a month later the pulp had completely gone to the bad, and the colonies had extended halfway across the plate.

To tube No. 2 I applied  $\frac{1}{8}$  grain of sublimate in powder, also placed in the incubator, and observations at the end of 10 and 24 hours showed that the salt had penetrated about halfway down the pulp.

To tube No. 3  $\frac{1}{8}$  grain sublimate paste was added; at the end of 10 hours this had penetrated nearly to the apex. A week later I found the agar in the test tube was infected from the outside of the small tube. On removing the pulp from the tube and placing it on a plate of agar I found no change in the cotton wool, and that the sublimate had gone quite to the end of the pulp. Two days later there was a white areola, corresponding in size and shape to the pulp, all round it, due to the diffusion of the sublimate in the agar. A month later this pulp was perfectly stiff and unchanged, surrounded by an antiseptic zone, which completely prevented colonies from the other pulps on the same plate reaching it.

To tube No. 4 I added  $\frac{1}{16}$  grain of the paste; this at the end of 10 hours had penetrated three-quarters of the pulp, and at the end of a month, on the plate of agar, showed some colonies round the apex.

No. 5 tube was given  $\frac{1}{4}$  grain of paste, and at the end of 10 hours it was greyish-white nearly to the apex.

The conclusions which I think may be fairly deduced from these experiments are:—

1st. That in order to obtain a satisfactory result at all, one must apply enough of the drug, for in tube No. 4, where  $\frac{1}{16}$  of a grain was used, there was evidently not enough sublimate for the size of the pulp.

2nd. That for equal doses the paste penetrates more rapidly than the powder.

3rd. Taking into account the difference in size between a calves' pulp and a human pulp, the dose to apply to the latter need not exceed  $\frac{1}{8}$  of a grain—that is, a portion of paste about the size of the head of a fairly large pin would be amply sufficient.



The amount of mischief which an untreated dead pulp is capable of generating will at once be seen on glancing at the story of tube No. 1.

In practice I now use the paste, and instead of applying it with a steel instrument I use a platina needle, in order to avoid a possible source of discoloration. I do not now cover the paste with a little pledget of wool as I consider it quite unnecessary. Professor Miller has recently suggested for the purpose, for use with his tabloids, a gold cylinder; to my mind gutta-percha would be better, as, of course, the mercury enters rapidly into combination with the gold, and, therefore, less is left for penetrating the pulp.

My assistant, Mr. Anderson, thinks—and I quite agree with him from a study of my own records—that, in order to obtain the best results, it is well, if possible, to remove the coronal pulp, and to apply the perchloride directly to what pulp remains in the roots.

Professor Miller, in a communication to the World's Columbian Dental Congress, held last August in Chicago, gave the results of his researches in this direction up to that date. He recommends the use of small tabloids composed of sublimate and thymol, of each 0.0075 gramme; he adds that "the thymol is designed to prevent the sublimate being so rapidly absorbed, besides giving a greater permanency to the application by reducing its solubility. Very seldom, so far, has pain followed the use of these tablets, while experiments out of the mouth show that they still possess sufficient penetrating power."

Professor Miller kindly sent me some of these tabloids, and my experience of them up to the present has been very favourable, besides their being very convenient to use.

In conclusion, I do not wish to be understood as advocating this method of treatment in other than exceptional cases, such as I have already defined; in these it is certainly deserving of trial, and, as I have endeavoured to show by the records I have brought forward, gives us a fair chance of preserving teeth for a further term of usefulness, which otherwise would be a possible source of future trouble to their owners, or be radically cured by the forceps.

*Pulps treated with HgCl<sub>2</sub>.*

| Case No. | Age | Sex | Date of operation | When last seen | Tooth                 | Previous Treatment             | Remarks                                                                                       | Colour       | No. of months from operation to last visit |
|----------|-----|-----|-------------------|----------------|-----------------------|--------------------------------|-----------------------------------------------------------------------------------------------|--------------|--------------------------------------------|
| 1        | 25  | F.  | 3 Jan., '91       | 24 Dec., '92   | L. L. M. <sub>3</sub> | As <sub>2</sub> O <sub>3</sub> | Has had pain in cold winds, when all teeth pained. No gum-boil or root trouble                | Dark grey    | 24                                         |
| 2        | 40  | F.  | 3 Feb., '91       | 26 Feb., '94   | L. L. M. <sub>1</sub> | Do.                            | Quite comfortable. No root trouble.                                                           | Dark         | 36                                         |
| 3        | 21  | M.  | 2 Feb., '91       | 30 Mar., '92   | Do.                   | None                           | Do.                                                                                           | Grey         | 13                                         |
| 4        | 33  | M.  | 7 Feb., '91       | 17 Feb., '92   | R. L. B. <sub>2</sub> | As <sub>2</sub> O <sub>3</sub> | Do.                                                                                           | Dark         | 12                                         |
| 6        | 45  | M.  | 31 Jan., '91      | 17 Mar., '92   | L. L. M. <sub>1</sub> | Do.                            | Do.                                                                                           | Not dark     | 15                                         |
| 7        | 18  | F.  | 11 Feb., '91      | 19 Mar., '92   | R. U. M. <sub>1</sub> | Do.                            | Do.                                                                                           | No change    | 13                                         |
| 8        | 30  | F.  | 12 Feb., '91      | Do.            | R. L. B. <sub>2</sub> | Do.                            | Do.                                                                                           | Dark         | 13                                         |
| 10       | 25  | F.  | 26 Feb., '91      | 24 Nov., '91   | L. U. B. <sub>1</sub> | Do.                            | Do.                                                                                           | Do.          | 9                                          |
| 11       | 40  | F.  | 15 April, '91     | 19 Mar., '92   | L. L. B. <sub>3</sub> | Do.                            | Do.                                                                                           | Do.          | 11                                         |
| 12       | 40  | F.  | Do.               | Do.            | R. L. B. <sub>2</sub> | Do.                            | Once had slight pain.                                                                         | Do.          | 11                                         |
| 13       | 18  | F.  | 5 May, '91        | Do.            | R. L. M. <sub>1</sub> | Do.                            | Quite comfortable.                                                                            | Do.          | 10                                         |
| 14       | 50  | M.  | 6 May, '91        | 2 Mar., '94    | L. L. M. <sub>2</sub> | Do.                            | Says it is sometimes a little tender; but I was unable to detect any evidence of root trouble | Dark         | 34                                         |
| 16       | 18  | F.  | 13 May, '91       | 19 Mar., '92   | L. L. M. <sub>1</sub> | Do.                            | Quite comfortable. No root trouble.                                                           | Do.          | 10                                         |
| 17       | 30  | M.  | 30 May, '91       | 1 Mar., '94    | R. U. B. <sub>1</sub> | Do.                            | Slight periodontitis occasionally. No root trouble                                            | Dark at neck | 34                                         |
| 18       | 25  | M.  | 10 June, '91      | 2 Mar., '94    | L. U. B. <sub>2</sub> | Do.                            | Quite comfortable. No root trouble.                                                           | Dark         | 33                                         |
| 19       | 15  | F.  | 25 July, '91      | 21 Mar., '92   | L. L. B. <sub>1</sub> | Do.                            | Slight tenderness over root. No gum-boil                                                      | Grey         | 8                                          |
| 20       | 14  | M.  | 27 July, '91      | 9 April, '92   | L. L. M. <sub>1</sub> | Do.                            | Quite comfortable. No root trouble.                                                           | —            | 9                                          |
| 21       | 30  | F.  | 28 July, '91      | 19 Mar., '92   | L. U. B. <sub>1</sub> | Do.                            | Slight pain immediately after filling; otherwise all right                                    | Dark         | 8                                          |
| 22       | 40  | F.  | 30 July, '91      | 17 Mar., '92   | R. L. M. <sub>1</sub> | Do.                            | Quite comfortable. No root trouble.                                                           | Do.          | 8                                          |
| 23       | 25  | F.  | 5 Aug., '91       | 18 Mar., '92   | R. U. M. <sub>1</sub> | Do.                            | Do.                                                                                           | Ash grey     | 7                                          |
| 24       | 30  | M.  | Oct., '91         | 24 Mar., '92   | L. L. M. <sub>1</sub> | Do.                            | Complete failure                                                                              | —            | 5                                          |

<sup>a</sup> These patients answered by letter.<sup>b</sup> This patient has had an abscess in the right lower jaw at the root of an adjoining tooth; the pain may have been caused by this.<sup>c</sup> There was an attack of periodontitis in this tooth prior to my treatment.

Experiments with Calves' Pulps.

| No. | Treatment.                                    | Ten hours after.                       | Twenty-four hours after. |
|-----|-----------------------------------------------|----------------------------------------|--------------------------|
| 1   | Infected ; but <i>no</i> sublimate            | No change in colour ; red and vascular | Unchanged                |
| 2   | Infected ; $\frac{1}{8}$ gr. sublimate powder | Greyish white ; about half way down    | Same                     |
| 3   | Infected ; $\frac{1}{8}$ gr. sublimate paste  | Greyish white ; nearly to apex         | White down to apex       |
| 4   | Infected ; $\frac{1}{16}$ gr. sublimate paste | Greyish white ; $\frac{3}{4}$ way down | Same                     |
| 5   | Infected ; $\frac{1}{4}$ gr. sublimate paste  | Greyish white ; nearly to apex         | Same                     |

Above tubes were left for one week in an incubator at 35°C., at the end of that period three of them were removed to a plate of agar and replaced in incubator.

| No. | Condition when removed.                                                                | Two days after.                                                                          | A month after.                                                         |
|-----|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| 1   | Agar liquefied ; cotton wool nearly black ; pulp gangrenous and foul-smelling          | Colonies of various sorts all round                                                      | Completely gone to the bad ; colonies spreading half way across plate  |
| 3   | Agar infected from the tube ; cotton wool unchanged ; sublimate had penetrated to apex | White areola, corresponding in shape and size of pulps all round, due to $\text{HgCl}_2$ | Stiff ; unchanged ; no colonies ; line of demarcation due to sublimate |
| 4   | Ditto ; sublimate did not get as far as apex                                           | No development of colonies                                                               | Soft - looking ; apex black ; well - marked colonies round apex        |

ART. XVI.—*Ruptured Tubal Pregnancy, with Intra-peritoneal Hæmorrhage, successfully treated by Abdominal Section.*<sup>a</sup> By ALFRED J. SMITH, Ex-Assistant-Master, Rotunda Hospital ; Examiner in Midwifery, Royal University ; Professor of Midwifery, R.U.I.

THE number of successful operations for the radical cure of ruptured tubal pregnancy, where the hæmorrhage was peritoneal, have been extremely few in Ireland ; in fact, I can only find a

<sup>a</sup> Read before the Obstetrical Section of the Royal Academy of Medicine in Ireland, on Friday, April 13, 1894.

record of two—one by Dr. Smyly, Master of the Rotunda, and the other by Professor Byers, of Belfast. Their limited number, therefore, must be my apology for placing before the consideration of this Section of the Academy a detailed report of a successful case treated by me in my gynæcological wards in St. Vincent's Hospital. On the 22nd of March last I was asked to see a case in one of the suburbs of Dublin. On arrival the patient told me that her age was thirty-six, that she had been married fourteen years, had two children born at full term alive and healthy. The youngest child was eight years old. There was an adherent placenta after the birth of the last child; its removal was followed by a septic fever which invalidated the patient for three months. Then followed six miscarriages at about the third month, with intervals between the abortions of from nine to fifteen months, the last abortion being in October, 1892. In the June following—*i.e.*, in the June of last year—her uterus was curetted; since then her changes were quite regular as to time, but lasted about seven days; they were accompanied by pains of a bearing-down character. Her changes in last December and January were quite as usual, but the changes which came on at the beginning of February began without any unusual pain and continued without intermission up to March 22nd. She put off consulting a doctor from day to day, and sought my advice only because a dose of salts taken in the early morning had not acted, and that for the first hour or so before my arrival she complained of severe griping pains in the abdomen, and a feeling as if there was some lump in the back passage which caused a constant desire to stool, but without any result. The patient looked more unwell than her symptoms accounted for, so I ordered her at once into St. Anne's ward at St. Vincent's Hospital.

On visiting the hospital next morning, Good Friday, I was struck at once by the great pallor of the patient; the small quantity of blood discharged per vaginam could not account for the patient's serious condition. Pulse feeble, 120. Temp. 99° F., lips blanched and pupils dilated. External palpation revealed a uniform tenderness over the lower part of the abdomen. A point of maximum intensity could not be ascertained; no dulness on percussion.

Examination per vaginam by the bi-manual method was decidedly unsatisfactory, as it had to be made in the ordinary ward bed, and the extreme weakness of the patient prevented a thorough examination. The points noted were: the uterus felt apparently



normal as to position, but slightly anteposed; the fundus enlarged and soft; the posterior *cul-de-sac* felt boggy and bulged into the vagina. I could not form any opinion as to the condition of either broad ligament. But the conclusion was forced on my mind that I was dealing with a case of intra-peritoneal hæmorrhage, most probably caused by the rupture of a tubal pregnancy and not a collapse from fecal impaction, and I determined to operate at once. Mr. M'Ardle kindly saw the case with me and urged the advisability of immediate operation.

The patient refused to be operated on without her husband's permission, and three valuable hours were lost before he could be communicated with and his permission obtained. To such a low condition was the patient run that I had to perform the abdominal section in her own bed in the large ward. Mr. M'Ardle gave me his valuable assistance, and Dr. Anderson, house surgeon, administered ether.

An abdominal incision to admit three fingers was made in the usual situation. The anæmic appearance of the wound was remarkable. On opening the peritoneum blood welled up in great quantity and established the diagnosis. The pelvis was full of tolerably firm blood clots, which had become more or less adherent to the pelvic organs, and caused some difficulty in making out from which broad ligament the hæmorrhage was coming. On satisfying myself that it was from the left side, I passed a stout silk ligature through the broad ligament close to the uterus with Tait's needle and tied firmly. Having thus controlled the hæmorrhage I proceeded to remove the blood clots, removing large quantities by aid of the fingers and a sponge. This method I found too slow, so I employed the douche, using a saline solution of ordinary refined household salt in the proportion of one tablespoonful to one gallon, and at a temperature of 99° F. The stream of water was directed against the bottom of Douglas' pouch, the height of the douche can being 2½ feet, and then, with the aid of my fingers, the clots were floated out quickly. I now changed the patient to a Trendelenburg's table, so as to see better what I was doing. It was noted the inverted position was of much benefit to the patient; her pulse, which was almost imperceptible in the wrist, returned. Then I tied the broad ligament by the usual double ligature and removed the ruptured tube and ovary [specimen here shown]. The right Fallopian tube and ovary were examined and found normal. The pelvic cavity was again douched out with the warm

saline solution; the excess of fluid was not aspirated, but was left in to be absorbed by the peritoneum. A Keith's glass drainage-tube was inserted, and the abdominal wound was closed by interrupted silk sutures.

On lowering the Trendelenburg's table and transferring the patient to the bed a marked effect on the circulation was observed; the pulse apparently dying out, its volume returned as soon as the patient had an enema of a pint of the saline solution, to which 30 drops of laudanum were added; it was necessary again to slightly invert the patient by an arrangement of pillows placed under her hips and raising the end of the bed.

The after-treatment differed from ordinary abdominal sections inasmuch as the patient was allowed within the first twenty-four hours to drink as much milk, well diluted with hot water, as she wished; also weak hot tea. On the second day she had an egg-flip, beef-tea, &c., without any trouble following. Stimulants were administered per rectum. Bowels moved without medicine on the third day. The drainage-tube was able to be removed on the fourth day after the operation.

Her recovery was not perfectly afebrile, as an attack of pneumonia, confined to the base of the left lung, supervened on the second day, the temperature rising to 102° F., pulse 118, the sputum being characteristically rust-coloured. In treating this complication I had the benefit of my colleague's, Dr. Cox's, opinion, who states that there is also distinct evidence of a phthisical cavity at the apex of the left lung. Notwithstanding these serious complications, the patient is doing extremely well.

I am glad to be able to state that she was able to leave her bed this morning, just three weeks since the operation.

*Pathological examination of specimen by Dr. Glasgow Patteson, Pathologist to the Hospital.*—The specimen consisted of the left ovary, tubo-ovarian ligament, the outer two-thirds of the Fallopian tube, and the portion of the broad ligament which had been embraced in the ligature. The ovary was enlarged to about twice its normal size, and section revealed—what had been evident on palpation—the presence of a cyst about the size of a cherry, which was filled with a milkish opaque fluid, and had adherent to its walls a quantity of semi-opaque gelatinous material which, examined microscopically, was found to consist of a homogeneous, granular, and fatty *débris*, most probably epithelial in character. The cyst was definitely enclosed in a fibrous capsule. The inner portion of the tube was

considerably enlarged in size and presented signs of inflammation; while the outer portion of the tube showed that the fimbriæ had to a large extent become obliterated by adhesions, and that these had subsequently to a large extent been broken down by a rupture which extended for about an inch along the tube internal to the ostium. This ruptured cavity presented very ragged walls, the normal epithelium being totally destroyed and the surface covered with irregular shreds and tags of inflammatory material or coagulated fibrin. There was no trace of an ovum in the tube, nor any sign of commencing formation of membranes, though on this point I cannot speak with certainty, as the specimen had undergone considerable maceration in weak spirit, and the time at my disposal was too short to allow of a microscopic examination.

All the blood-clots removed from the pelvic cavity were preserved and carefully searched without finding any fœtus. From the pathological report just presented to you I consider that what doubtless took place soon after the adhesion of the ovum near the ampulla of the tube is that the fimbriæ closed over it and became adherent to one another, as they may be constantly seen to have done in cases of non-adherent hydrosalpinx, and the subsequent dissection of the fimbriæ constituted the rupture. The absence by macroscopic examination of any evidence of the fœtus is a matter of frequent occurrence in Fallopian pregnancies occurring in the outer third of the tube on account of the early period of their rupture about the sixth week. A very interesting query—Is this case an example of complete “tubal abortion” in ectopic gestation?

*Remarks.*—Some points of special interest occur to me as worthy of note in reviewing this case—namely, the complete absence of any history of pregnancy, or the shedding of any decidua from the uterus. These two facts, coupled with the constant ineffectual effort to stool, might easily lead to a serious error in diagnosis.

The case also illustrates the value of—

1st. Trendelenburg's table.

2nd. The use of saline solutions for peritoneal douche or enema in cases of severe hæmorrhage.

And, lastly, that our after-treatment in abdominal sections can be guided by rational methods, and that it is not necessary to follow slavishly the old starvation process.

ART. XVII.—*Note on Treatment of Acne Rosacea.* By HENRY S. PURDON, M.D., Physician, Hospital for the Skin, Belfast.

THE treatment of acne rosacea is generally unsatisfactory. No doubt, the late Sir Erasmus Wilson was correct when he expressed the opinion that the disease was closely allied to eczema, due to "nutritive debility." And another fact in its obstinate character must not be lost sight of—viz., its "hereditary" nature. I have met with several families in which a tendency to the disease exists, or, as it is called, "atavism," the grand-children showing disease best. In acne rosacea we have frequently dyspepsia in some form or other, whilst locally a determination of blood to the capillary vessels of the affected part, showing itself by dilated minute blood-vessels, that should be scarified in a longitudinal manner, after which, when bleeding has stopped, the part may be painted over with Richardson's "styptic colloid." The sebaceous follicles are inflamed, but do not mature readily. As regards treatment, the dietary and any gastric derangement having been attended to, the following local plan gives good results:—Bathe affected parts with spirits of horse-radish, say in the morning, whilst at bed-time rub pretty firmly into disease a pomade of sulphur with a small quantity of carbolic acid. In place of the latter, sometimes good results are obtained by substituting 10 grains of the green iodide of mercury to the ounce. All comedones to be squeezed out with an "extractor." As a "reducing" agent, ichthyol is often better than the sulphur. It may be of interest if I give Dr. Unna's (Hamburg) own words, who, in a letter to me, dated July 26, 1893, says—"I have never recommended ichthyol in acne, but only in rosacea, which is, after my researches, never a sequence of real acne, but of seborrhœic eczema, the tubercles of which are none of acne, but of a special folliculitis. This common mistake explains, perhaps, the usual use by other dermatologists of ichthyol in acne."

In rosacea, when much hypertrophy occurs giving rise to lipoma, excision is the only remedy, the enlargement of the affected part being now due to a new growth of adipose tissue from excess of nutrition causing the rapid production of fatty cells and lobules around and between the connective tissues and blood vessels. These lipomas, occurring on the nose and associated with rosacea, are, as a rule, always pendulous.



ART. XVIII.—*Andrew Vesalius.* By GEORGE MATHESON CULLEN,  
M.D., M.Ch. Univ. Edin.

(Continued from page 307.)

## PART II.

Corporis humani qui membra minuta secaret  
Vesalio nullus doctior extiterat  
Hic medicis auxit, pictoribus auxit et artem  
Dum subit internas quae latuere vias.

—(B. A. Montanus).

EVERY man who having turned to a particular science has distinguished himself therein, is apt to be so associated with this particular branch of knowledge that it is with surprise we learn that his work was not restricted within its limits. And so it is with Vesalius. He has been so intimately connected with anatomy, that his work and his influence upon medicine, physiology, pathology, and surgery are often overlooked, and for the same reason his position and importance in the history of art have been to a great extent unnoticed.

The condition of anatomy at the time of Vesalius must be thoroughly understood before we can rightly estimate the changes that he brought about. Before the Christian era, probably the only men who had dissected human bodies were the anatomists of the school of Alexandria, and of their knowledge we can only judge by the excerpts which Galen has preserved. The latter does not seem to have had any accurate acquaintance with human anatomy, but his books were eagerly read by the Arabs, whose religion prevented them from verifying his statements by actual dissection. When Christian Europe emerged from the flood of Barbarism, it also clung to Galen's works, for they were the only ones that existed upon anatomy. The dissection of bodies was a reform that was not definitely brought about for centuries. In 1213 Frederick II., King of Sicily, promulgated a law whereby no one was allowed to practice surgery without passing an examination in anatomy, and Martianus, the principal doctor on the Island, obtained leave to give a course of demonstrations on a human body once every five years.<sup>a</sup> Whether such a course was ever held or not it is impossible to say; but the first public dissection of which there is a record was performed by Luigi Mondino of Luzzi, at Bologna in 1315. According to Guy de Cauliac<sup>b</sup> (flor. 14th cent.), Mondino described the body in four demonstrations—

<sup>a</sup> Burgraaue. *Historie de l'Anatomie.* 8vo. Gand., 1840. P. 47.

<sup>b</sup> Guy de Cauliac. *Chirurgia (Anat., cap. I., doct. 1).*

the first upon the abdominal viscera, the second upon the heart and vessels, the third on the brain and nerves, and the last upon the extremities. Little in the way of exact knowledge could be expected from such an examination. Books of anatomy, however, began to be published—reproductions of Galen, with various additions derived from the Arabs, or from the author's own experience. Berengarius di Carpi opened over one hundred bodies,<sup>a</sup> and Benivieni some twenty;<sup>b</sup> but there was almost no progress, and when Vesalius began anatomy it was practically as Galen left it, or rather worse, because only a few of Galen's works had survived, and these were so obscure in many places that it was almost impossible to rightly understand them. Thus we find that Sylvius in his teaching skipped over whole chapters,<sup>c</sup> which he declared would uselessly vex the student. The foundation then upon which Vesalius built was the anatomy of Galen, and it was only in 1539, when he began to dissect more systematically at Padua, that he was brought to feel that Galen was wrong.

Galen had very imperfectly described myology and osteology, and though his description of the brain (of ox) is fairly accurate, he enumerates only seven pairs of cranial nerves. There were, according to him, two venous trunks, the vena cava and the vena portæ, which are joined together by branches below the liver; the vena cava mounts to the heart, and sends through the right auricle a branch (pulmonary artery) to the lungs. The liver is the centre of the venous system, and from it veins proceed; the heart is composed of two ventricles which communicate by pores through their walls; the arteries bring air from the lungs to the left ventricle, and from thence it is distributed throughout the body. He ascribed life to three forces—one in the liver, acting by the veins and ruling the natural functions; the second, in the heart and arteries, presides over the vital functions; and the third, passes through the brain and nerves to control the animal functions.<sup>d</sup>

Such in brief epitome was Galen's idea of anatomy. What did Vesalius do? He gave a most excellent account of the bones of the body, and in particular may be mentioned his description of the sphenoid bone, the sternum, the sacrum, the coccyx, and the vertebræ. In myology, too, he made a great advance, although

<sup>a</sup> Berengarii di Carpi, *Isagoges per lucidæ*, &c. 8vo. 1521.

<sup>b</sup> Roth's *Andreas Vesalius, Bruxellensis*. 8vo. Berlin, 1892. P. 195.

<sup>c</sup> Vesalius, in *Epist. de Chynæ Radice*, in *Opera Omnia*. Vol. II., p. 666.

<sup>d</sup> Burgraave. *Hist. de l'Anatomie*. 8vo. Gand, 1840. P. 35, et seq.

he did not enjoy the advantage of a nomenclature. He gave the first clear account of the anterior and posterior mediastina, and of the thyroid glands. He showed how Galen erred in saying that the brain was a double organ like the eyes or hands, and he described well the commissures between the cerebral hemispheres. So far as I know there is only one structure associated with the name of Vesalius—the foramen of Vesalius, which is sometimes found between the foramen spinosum and the foramen ovale, on the cranial floor. His name, however, is so intimately connected with the whole structure of the body that he could well afford to lose even this special mention. It may astonish some to hear that he knew many things ascribed to the discovery of later anatomists; for instance, he has described the emergent veins of Santorini,<sup>a</sup> the Pacchionian bodies,<sup>b</sup> the foramen of Munro,<sup>c</sup> the valve of Vieussens,<sup>d</sup> the Pons Varolii,<sup>e</sup> the antrum of Highmore,<sup>f</sup> the Fallopian tubes,<sup>g</sup> &c. He gave the first accurate account of the foramen rotundum<sup>h</sup> in the tympanic cavity, of the corpora cavernosa penis,<sup>i</sup> of the stomach and pylorus,<sup>j</sup> of the liver,<sup>k</sup> of the peritoneum,<sup>l</sup> of the diaphragm,<sup>m</sup> of the ventricles of the brain,<sup>n</sup> and of the course of the venæ azygos,<sup>o</sup> seminal vessels and vasa deferentia.<sup>p</sup>

But with all his industry Vesalius left something to be gleaned by his successors. He did not recognise the external pterygoid muscle, the levator palpebræ superioris, the pyramidales nor the occipital part of the occipito-frontalis, and he did not separate the teres minor from the infra-spinatus.<sup>q</sup> He did not describe the lacrymal gland, the punctum lacrymale, the pulley of the superior oblique muscle of the eye, Wirsung's duct, Wharton's duct, the stapes, the internal ear, the suprarenal capsules, the clitoris, the hymen,<sup>r</sup> the inguinal canal in women, &c. His great argument against Galen was that the latter dissected animals and applied the description to man; and it is curious to find Vesalius himself committing this fault, as in the case of the muscle surrounding

<sup>a</sup> Opera Omnia cura Boerhaave. P. 350.

<sup>b</sup> Ibid. P. 537.

<sup>c</sup> Ibid. P. 545.

<sup>d</sup> Ibid. P. 546.

<sup>e</sup> Ibid. P. 540.

<sup>f</sup> Ibid. Bk. I., cap. ix.

<sup>g</sup> Ibid. P. 461.

<sup>h</sup> Ibid. Bk. I., cap. viii.

<sup>i</sup> Ibid. Lib. V., cap. xiv.

<sup>j</sup> Ibid. Lib. V., cap. iii.

<sup>k</sup> Ibid. Lib. V., cap. vii.

<sup>l</sup> Ibid. Lib. V., cap. ii.

<sup>m</sup> Ibid. P. 240.

<sup>n</sup> Ibid. Lib. VII., cap. vi.

<sup>o</sup> Ibid. P. 323.

<sup>p</sup> Ibid. P. 450.

<sup>q</sup> Ibid. P. 218.

<sup>r</sup> The hymen had been long well known, but in Exam. Obs. Anat. Fallopii Vesalius declares he is not satisfied of its existence.

the optic nerve—a structure which exists indeed in oxen, but he mentions it as occurring in man.<sup>a</sup>

In his enumeration of the cranial nerves he follows Galen, and consequently leaves much to be desired. Passing over the olfactory nerves he makes the optic the first pair,<sup>b</sup> and in opposition to Galen he declares them to be solid. The second<sup>c</sup> is the motor oculi, the trochlearis being indicated by a branch of his third<sup>d</sup> pair—the trifacial. The abducens he missed, and he makes up the fourth<sup>e</sup> by various palatine nerves. The fifth<sup>f</sup> is composed of two branches—the auditory and facial—but he does not mention the Gasserian ganglion. The sixth<sup>g</sup> pair he forms from the spinal accessory and vagus, and he describes the sympathetic as part of this pair, and mentions that it sends branches even as low as the bladder. He knew also of the recurrent laryngeal branch of the vagus and the communicating branch to the hypoglossal; the latter<sup>h</sup> forms his seventh and last pair. These are errors of classification for the most part, but we must not overlook certain erroneous descriptions he has given. Thus he speaks of the sagittal suture being sometimes prolonged into the foramen magnum,<sup>i</sup> and he divides each lung into two lobes.<sup>j</sup> His ideas with regard to the structure of the teeth and of the kidneys are very defective, though Eustachius had already given an excellent account of both. He describes the stylo-hyoid ligaments as part of the hyoid bone,<sup>k</sup> and makes the digastric muscle arise from the styloid process.<sup>l</sup> His account of the arch of the aorta is very confusing, and he says it gains the posterior wall of the thorax at the fifth dorsal vertebra.<sup>m</sup> He traces both arteries and veins into the cerebral sinuses,<sup>n</sup> and to this ascribes the pulsation of the brain. He denies that any vessels enter the cerebral substance,<sup>o</sup> which he believes is nourished by imbibition from the vessels of the pia mater. He also refuses to believe that some nerves are sensory and others motor,<sup>p</sup> or that a lesion of one side of brain is followed by symptoms affecting the other side of the body.<sup>q</sup> He knew nothing about the lymphatics.

<sup>a</sup> Ibid. P. 197.

<sup>b</sup> De Corp. Hum. Fabrica. Lib. IV., cap. iv.

<sup>c</sup> Op. Cit. Lib. IV., cap. v.

<sup>d</sup> Op. Cit. Lib. IV., cap. vi.

<sup>e</sup> Op. Cit. Lib. IV., cap. vii.

<sup>f</sup> Op. Cit. Lib. IV., cap. viii.

<sup>g</sup> Op. Cit. Lib. IV., cap. ix.

<sup>h</sup> Op. Cit. Lib. IV., cap. x.

<sup>i</sup> Opera Omnia. P. 22.

<sup>j</sup> Op. Omnia. P. 647.

<sup>k</sup> Ibid. Lib. I., cap. xiii.

<sup>l</sup> Ibid. P. 204.

<sup>m</sup> Ibid. P. 341.

<sup>n</sup> Ibid. Lib. III., cap. xiv.

<sup>o</sup> Ibid. P. 350.

<sup>p</sup> Ibid. P. 672.

<sup>q</sup> Ibid. Lib. IV., cap. iv.



Coming to the question of pregnancy and development, Vesalius has much to say that is interesting. He points out that the subpubic angle is greater in women than in men, but he discounts the idea that the pubic bones are separated during parturition—a problem eagerly discussed at that time. Vesalius also did much to clear up the significance of the term “Cotyledon,” and showed that these separate masses were not to be found in the pregnant uterus of woman. The uterine interior, uniformly smooth in the normal condition, becomes, according to him, covered with a rough membrane (decidua) in the early months of pregnancy. He describes three fœtal membranes; the external or chorion becomes attached particularly to one part of the uterus, and there forms the placenta; the middle or allantois is a sac for the fœtal urine that flows along the urachus from the bladder; the internal or amnion completely covers the embryo, and is filled with a fluid that transpires through the skin of the fœtus. The bones are developed either from membrane or cartilage, each bone being formed from several ossific centres, and he teaches the direct communication of the fœtal with the maternal blood. The uterus he declares to have a single cavity, and not two as Galen said, nor seven as popular belief inclined.

This in a very general way may give an idea of the contents of this wonderful work on anatomy. Its merits are great and striking, while its faults are mainly to be attributed to the training Vesalius had received, and to the influence which Galen still wielded over him.<sup>a</sup> In his letters to Roelants and to Fallopius our author again returned to anatomical questions, but he had been removed from the possibility of dissecting, and consequently he for the most part repeats what he had already said in his *Anatomy*. In his epistle to Roelants<sup>b</sup> he sums up in a convincing manner his argument that Galen did not dissect men, and was not to be trusted as an authority on human anatomy. Galen, he says, gave man a frontal suture, a premaxillary bone, an inferior maxilla made up of two pieces, a sacrum and coccyx composed respectively of three

<sup>a</sup> The *Epitome* is a very short summary (a few folio pages) of the larger work, and need not be considered here. There is a more extended analysis of *De Hum. Corp. Fabrica* in Lauth's *Histoire de l'Anatomie*, in Burgraaves' *Études sur A. Vesale*, and in his *Histoire de l'Anatomie*.

<sup>b</sup> And. Vesalii Bruxell. *Medici Cæsarei Epistola, Rationem . . . propinandi radicis chynæ decocti . . . pertractans*: and præter alia quædam, epistolæ ejusdam ad S. Sylvium sententiam recensens, &c. Basileæ ex officina Oporini. 4to. 1546. Pp. 204.

bones, a sternum made up of seven, a large cæcum, a liver of six lobes and a lung of five, a uterus with two cavities, and he described other structures which though present in animals are not to be found in man. Some, indeed, argued that Galen's descriptions referred to children<sup>a</sup> not to adults, but, continues Vesalius, if Galen gives us the lower jaw and the sternum of a child, why does he not also describe the occiput, or the sacrum or vertebræ of children? Moreover, says our author, Galen has missed out many structures present in the body, and given erroneous and misleading accounts of others. Galen did not know the middle ear, the medullary canal in the phalanges, that the ribs had two articulations with the vertebræ, that there were inter-articular cartilages in the sterno-clavicular, maxillary, and acromio-clavicular joints; he was ignorant of the thyroid glands,<sup>b</sup> and declared that the greater part of the stomach lay in the right side of the abdomen. Among his other errors Vesalius instances the vein from the spleen to the stomach, the opening between the ventricles of the heart, and his opinion that the aorta and gullet pierce the midriff by a single opening, that veins from the vena cava go to the stomach, and that the vena cava itself arises from the liver. "Assuredly," concludes Vesalius, "if we examine the body of man by careful dissection, and are not led away by vain imaginings or dreams, we must see that these things are wrong, and I, for my part, place greater trust in my own eyes than in what Galen teaches." This, indeed, is the key to the whole situation as between Vesalius and the adherents of Galen. In this letter our anatomist also gives many interesting details about his life, and he emphasises the fact that he had no teacher in anatomy, that he learned it by teaching and writing, and that Sylvius, Guinterius, and his other masters taught him only medicine.

Boerhaave and Albinus include in the *Opera Omnia Vesalii* the pamphlet written by Cuneus.<sup>c</sup> Cardan,<sup>d</sup> too, seems to think that he was the author under this *nom de plume*, but other authorities contest this opinion, and internal evidence goes to prove that Vesalius did not write it. In 1561 Fallopius published

<sup>a</sup> Afterwards Sylvius put forward the argument that Galen had described the heroic race of his time, and that since then changes had occurred in human anatomy coincident with the gradual appearance "of the present race of pigmies."

<sup>b</sup> Undoubtedly Galen has described some of these structures; he knew of the existence of the middle ear, and mentions the thyroid gland in his treatise, *De Voce*.

<sup>c</sup> G. Cunei. *Apologiæ F. Putei pro Galeno in anatome Examen*. Venitiis. 1564.

<sup>d</sup> Jerome Cardan. *Opera Omnia*. 10 vols. Lugduni. 1663. Tom. I., p. 46.

his "Anatomical Observations"—a masterly work, displaying the most careful and accurate dissection—and therein, while extolling the "divine Vesalius," he points out several mistakes which the latter had made, and corrects some of his descriptions. Vesalius wrote in reply "An Examination of the Anatomical Observations of Fallopius," and in this he for the most part repeats what he had already said. Kingsley has described it as a "wrong-headed and angry reply;" but this is an exaggeration, though it cannot be denied that Vesalius erred in defending some of his former descriptions, and in casting doubt upon the genuineness of certain things dissected by Fallopius—as, for example, the clitoris and the inguinal canal in women, &c.

Such is a rapid *résumé* of the writings of Vesalius upon anatomy, and it will show that though he was a careful dissector, and on the whole described the body very well, yet, after all, his chief claim to greatness lies in the war he waged against Galen. Anatomical teaching, too, he quite revolutionised. In his youth the books of Galen were read and commented upon with scarcely a demonstration of the parts on the human body, but when he became a teacher he changed all this, and the student learned his anatomy from no other book than the truthful page of man's body, laid open by the scalpel. It is no wonder that this new method bore fruit in a distinguished list of pupils—Fallopius, the most illustrious of dissectors; Columbus, whose descriptions are of the clearest, and who discovered the musculi pyramidales; Aranzi, whose luminous researches upon the *foetus* are well known; Vidus Vidius, who in his old age embraced the new doctrines; and many others.

But Vesalius was no one-sided man; he had studied medicine as a whole, and his conception of what the science should be was far above its condition at his time. Medical knowledge and practice were then at their lowest ebb; the writings of the ancients were to some extent preserved, but the difficulty of proper translation prevented even these from being very useful. A few of the extraordinary recipes of the old times were still known and in vogue—such as *theriaca* and the *Damocratic confection*—but the acquaintance with drugs was exceedingly limited. So great was the ignorance with regard to simples that William Turner, who wrote an *English Herbal* in the years 1551 and 1552, informs us that he could not find a physician in Cambridge who could tell him the proper name in Latin, Greek, or English of any plant he

brought forward. Naturally the people had come to scoff at medical men, and failed to be impressed with their learned and long-winded disputations about nothing. But with want of knowledge there was very little compensatory humility, for diseases were diagnosticated in the most extraordinary fashions. Robert Wittie<sup>a</sup> says of the doctors of the seventeenth century that there were only too many who did but “peepe into urines, handle pulses, and prescribe purges.” And in the time of Vesalius things were in a still worse state. Astrology was widely practised as an accessory of medicine. The mere gazing at the urine was made to give marvellous information. By means of it the doctor could tell what was the matter with a patient he had never seen, whether he suffered from epilepsy, quartan fever, or any other disease. If the urine were from a woman he was able to say whether she were pregnant or not, and if with child to prognosticate the sex of the infant. So prevalent did this fraud become in England that it had to be suppressed by a decree of the Royal College of Physicians.<sup>b</sup>

In the midst of this quackery and deception the clear common sense of Vesalius and his straightforward character directed him in the true way, and he shows this well in his “*Consilia*.” It was a common practice at the time to write a report of a case and send it to a celebrated physician for his advice, which took the form of a letter or *consilium*. Some six *consilia* of Vesalius still exist.<sup>c</sup> In one<sup>d</sup> of these, the case is that of a man blind of one eye and with diminished vision in the other, and he points out how difficult it is for him to speak definitely, for the cause of the disease, as well as the method of cure, depends on the symptoms, and “I do

<sup>a</sup> Primrose’s *Popular Errors*. Translated into English by R. Wittie. 12vo. Lond. 1651.

<sup>b</sup> Robert Wittie gives the text—“It is a ridiculous and foolish thing by looking into Urines alone to goe about after the manner of Witches and Conjurers, to divine anything as certaine and solid, either of the kind and nature of diseases, or of the state and condition of the sick : Wee admonish therefore all Physicians that they behave themselves for the future in this particular much more warily than had been wont heretofore to be practised by many. And for this cause we forbid all that practise Physic, that they prescribe anything in Physic for those idiots and silly women that carry about the urinals of the sick, except they either first know well, or see the sick party himself, or at least be plainly, fully, and sufficiently informed by them that ask their counsell, of the whole disease wherewith the sick doth labour, and of the several circumstances thereof : For by this means we shall both better maintain the dignity of the Physician and more fitly and skilfully bethink ourselves of those remedies, which shall be most profitable for one that is in danger,”

<sup>c</sup> These have been collected by Roth, and may be seen in his book on Vesalius.

<sup>d</sup> *Consilium Montani*.



not know," he continues, "what amount of vision the patient has, whether he sees best in bright daylight or at dusk, and whether the pupils react to light or no." As an example of his treatment we may instance the same case. He advises complete rest for the eyes, with bleeding occasionally, and purges from time to time. If the case proves obstinate he recommends the insertion of a seton in the neck, and finally, if the dim eye gets worse he urges the extirpation of the blind one. And so in his other consilia as well, he shows how extensive was his acquaintance with the ancients, and how far he was in advance of the methods of the day.

I have already mentioned the commentary he made upon the ninth book of Rhazes, the book which specially deals with the treatment of disease, but he also commented upon the whole medicine (the *Continent*, as it is called) of Rhazes, and wrote a treatise upon drugs. This last was a subject in which he took particular interest, and he seems to have used freely the China root (*i.e.*, sarsaparilla), guaiac, and other drugs which had been recently imported into Europe. Some of his prescriptions are complicated enough to our present ideas, but they are simple when compared with those of his contemporaries, and are free from the extraordinary and fanciful ingredients which it had become fashionable to employ. Indeed, on reading the clear account he has given of the preparation of sarsaparilla, &c., one cannot help regretting the loss of his work on drugs. So far as can be judged he does not seem to have been influenced by the chemical school which had lately risen, and been brought particularly into prominence by Theophrastus Bombastes von Hohenheim (Paracelsus) and his pupils.

Vesalius, too, pointed out distinctly and emphatically that the cure of the disease was to be sought, not in urine-smelling or in star-gazing, but by finding out the part of the body at fault, and ascertaining what the fault was. In his *Anatomy* he mentions<sup>a</sup> his determination to write a treatise on the pathological appearances he had noticed, and these must have been numerous since he gave his students special directions<sup>b</sup> to get the bodies of those who died in hospital, and whose symptoms they had observed during life. It is the more to be regretted that this resolution was never carried into effect, since the cases he incidentally records are of the most interesting nature. He is almost the first to record the presence

<sup>a</sup> De Hum. Corp. Fabr. Lib. I., Cap. V. (Op. Omnia, p. 17).

<sup>b</sup> Epistola de Chynæ usu (Op. Omnia, p. 680).

of stones in the gall-bladder.<sup>a</sup> In an interesting case of hydrocephalus he points out that the fluid is contained within the brain itself, and not between it and the interior of the skull. Here the ventricles of the brain contained nine pounds of water, and yet so little were the brain functions interfered with that neither paralysis nor convulsions were observed. At page 366 (*Op. Omnia*) there is the record of a case where the optic nerves did not form a commissure, and Vesalius had good grounds for contending that there was no real crossing of the optic tracts, when he saw that in two cases the extirpation of the right eye was followed by degeneration in the right optic nerve and tract. He also noticed that the omentum sometimes finds its way into a hernial protrusion.<sup>b</sup> Various alterations in the spleen are mentioned—in a case of elephantiasis it was enlarged, and he found it huge and liver-like in a man of “extremely pale and smooth skin.”<sup>c</sup> There is also a very interesting case of an ovarian cyst which contained some 180 pounds of water. This occurred in a spinster in whom the other ovary contained some nine or ten cysts, varying in size from a goose to an ostrich egg.<sup>d</sup> He describes also a chronic abscess of the abdomen which caused perforation of the portal vein and death by hæmorrhage.<sup>e</sup>

In speaking of epilepsy, he ascribes the disease to some obstruction to the cerebral nerves at the points where they arise, and he believes that this obstruction may be due to various causes, among others, to the poison coming from a distant and diseased organ or structure.<sup>f</sup> He also gives an instance of aortic aneurysm,<sup>g</sup> and declares that the disease is by no means a rare one.

Writing a book on normal anatomy, Vesalius did not consider that abnormalities and monstrosities should be described by him.<sup>h</sup> On several occasions, however, he breaks through this rule; as, for instance, when he tells us of a man with a double meatus

<sup>a</sup> *Epistola de Chynæ usu* (*Op. Omnia*, p. 674). Vesalius, though admitting having once seen a case where the bile duct entered the stomach, maintains that Galen was wrong in describing this as the usual course of the duct, which almost always opens into the duodenum.

<sup>b</sup> *Opera Omnia. De Hum. Corp. Fabrica. Lib. V. P. 421.*

<sup>c</sup> *Opera Omnia. De Hum. Corp. Fabrica. Lib. V. P. 438.*

<sup>d</sup> *Opera Omnia. P. 438.* Vesalius describes the fluid as being inside a distended uterus.

<sup>e</sup> *Opera Omnia. P. 438.*

<sup>f</sup> *Consilium Scholtzii—in Roth's Andreas Vesalius Bruxellensis.*

<sup>g</sup> *Fallopii Observ. Anatom. Examen. P. 71.*

<sup>h</sup> *De Hum. Corp. Fabrica. Lib. V. Opera Omnia. P. 455.*

urinarius,<sup>a</sup> and where he describes several abnormalities of the kidney.<sup>b</sup>

In the complete edition of his works (*Opera Omnia Vesalii*, 1725), we find included the *Chirurgia Magna*. This has been the subject of much controversy, many denying that it came from his pen and ascribing it to Fallopius or Borgarutius, or some one else. The book was first published in 1568 by Prosper Borgarutius, and it purports to be from a manuscript of Vesalius, and Burgraaue. Roth, and other competent authorities have declared for its authenticity. I am inclined to believe that it is mainly from the hand of Borgarutius himself. Vesalius, indeed, may have left some notes on Surgery, but I venture to think that he would not have mentioned the liver as consisting of many lobes, whereas in his *Anatomy* he points out that this is one of Galen's errors, and that, in fact, the organ is smooth and practically formed of only one lobe. In the *Surgery*, also, we find the old view put forward that the spleen sends veins to the stomach—a statement which Vesalius elsewhere emphatically denies. Again, it is stated in this work that there are two auditory ossicles, whereas in his letter to Fallopius, our author says that he had long known the existence of the third bone. Finally, there is little in the matter or style of the book which would lead us to consider it the work of Vesalius. The only interesting thing, perhaps, in the *Surgery* is the advocacy of the ligature of blood-vessels.<sup>c</sup> To Paré is usually ascribed the introduction of this method of procedure, but we find in his apology for ligature that he mentions Vesalius as one of those in favour of it. Vesalius himself points out that Avicenna had strongly recommended this procedure to prevent bleeding. Whether Vesalius ever did much practical surgical work, or whether he were merely called in as an expert to give an opinion and decide upon the line of treatment which another would carry out, is a question which cannot be definitely answered. We know for certain, however, that he performed such operations as bleeding, and did some amputations for gangrené of the extremities. In one<sup>d</sup> of his "consilia" he brings forward a method of cure he had devised for pleural abscess following a penetrating wound of the chest—it is, in short, drainage—by making a counter-opening at the lowest part of the pleural cavity, and he mentions

<sup>a</sup> De Hum. Corp. Fabrica. Lib. V. *Opera Omnia*. P. 454.

<sup>b</sup> Ibid. Lib. V., Cap. X.

<sup>c</sup> *Chirurgia Magna*. Op. Omnia. P. 971.

<sup>d</sup> *Consilium Ingrassias*.

four cases where he had ordered it, in three of them with perfect success.

His opinion of the relation of the different parts of the medical profession to one another is thoroughly sound and must have had some influence in bringing about a better state of things. "The practice of medicine," he says, "is miserably torn asunder; some study physic and call themselves physicians, and they look down upon those who practice surgery—the other branch of medicine—and regard and treat them as servants. It is ridiculous to put one branch of the science before the others, since the three means of attacking disease cannot be disjoined. We have, indeed, hygiene and medicine and surgery, but they all combine for the one end—the cure of the patient. How much more quickly will the disease be conquered if one is master of all three divisions? Indeed, all three are required in treating most diseases. It has come about also that the compounding and administering of drugs are left to the apothecary, and thus doctors have lost the necessary knowledge of simples. Wrong and barbarous names are given to medicines, while many compounds used by the ancients are unknown among us."<sup>a</sup> Vesalius also strongly urges doctors to make themselves familiar in every branch of their profession, and think it no disgrace to use their hands. He also vigorously advocates the claims of anatomy, showing that it is the very groundwork of medical knowledge, and in a particular manner he insists upon its necessity for the proper understanding of surgery. Indirectly, too, the latter science owes much to Vesalius, for it was from his works that Paré learnt his anatomy.<sup>b</sup> Vesalius also practised vivisection, and he points out that this is the only method by which physiology, the science of living things, can be known.

Passing from the domain of medical science to that of general literature and culture, we find that Vesalius was a well-read scholar. His acquaintance with the Latin and Greek languages was extensive and accurate. In Arabic he was familiar, and he had read a Hebrew edition of Avicenna. His works, also, show him to be a man of artistic feelings and tastes, and indeed his services to art were of no mean order. Before his time there existed few illustrations of anatomical subjects. It is true that Michael Angelo, Raphael, and Rosso de Rossi had made some sketches in this direction, but they were rough and unfinished.

<sup>a</sup> De Humani Corporis Fabrica. Dedic. ad Cæsarem.

<sup>b</sup> See Malcaigne's *Oeuvres d'Ambroise Paré*. *Introd.*, p. 266.



Two well-known painters, however—Leonardi da Vinci<sup>a</sup> and Albert Dürer—had composed designs for anatomical works, but in these cases the subject was approached from the standpoint of the artist rather than that of the anatomist. According to Choulant,<sup>b</sup> the first medical work to be illustrated with anatomical woodcuts is the *Fasciculus Medicinæ* of Johannes de Ketham, which appeared in 1491. After that there gradually appeared the illustrated works of Johannes Peylick,<sup>c</sup> of Magnus Hundt,<sup>d</sup> of Laurence Phryesen,<sup>e</sup> of Berengarius di Carpi.<sup>f</sup> All these illustrations, however, are rude and wanting in artistic treatment, but engraving seems to have sprung at once into maturity when Vesalius published his work in 1543. As Didot well says: "Up till then wood-engraving had been used for the decoration of books or to reproduce masterpieces of painting or design rather than to represent scientific or other objects whose definition could not be so well pointed out by words as by illustrations. But in the magnificent work of *Anatomy* by Vesalius, wood-engraving shows itself to be henceforth the useful auxiliary of science, and proves how much the illustrations inserted in the text can facilitate the explanation."<sup>g</sup> And the large number of reproductions of these plates, and the other illustrated anatomical works which arose like a cloud in the succeeding years, are a clear proof that the utility of the engravings was recognised, and indicate to us the great impetus which Vesalius gave to the art of engraving. In the history of the introduction of copper-plate engraving into England, also, he occupies a peculiar and important position, for he did a great deal to popularise that form of engraving when it was scarcely known there. The first example of copper-engraving in England is, probably, the illustrated title-page of the small book, "*Galenî di Temperamentis*," published in 1521. In Raynald's "*Birthe of Man-kynd*,"<sup>h</sup> of date 1540, there are also three specimens of this kind

<sup>a</sup> De Vinci made his designs for a work upon the "Movement of the Human Body." The text was written in "mirror writing," as some say from caprice, or as Ireland (Blot on Brain) suggests, because he wrote with left hand, owing to hemiplegia of right side.

<sup>b</sup> Choulant. *Geschichte der anatomischen Abbildung*. 4to. Leipzig. 1852.

<sup>c</sup> J. Peylick. *Philosophiæ Naturalis Compendium*. Fol. Leipzig. 1499.

<sup>d</sup> Magni Hundt. *Antropologium, de hominis dignitate, &c.* 4to. Leipzig. 1501.

<sup>e</sup> *Spiegel der Artzney, &c., gemacht von L. Phryesen*. Fol. Strasburg. 1518.

<sup>f</sup> "*Commentaria*" and *Isagoges Breves, &c.* 1522.

<sup>g</sup> A. F. Didot *Essai . . . sur la gavage en bois*. 8vo. Paris. 1863. P. 91.

<sup>h</sup> According to John Jackson (*Treatise on Wood-Engraving*. 4to., Lond., 1861), Raynald's name did not appear on the first edition. In the second edition (1545) the illustrations were woodcuts.

of work. But the appearance of the *Anatomy of Vesalius* in 1543 excited such widespread admiration in England that Henry VIII. ordered Gemini<sup>a</sup> to reproduce the illustrations on copper. This was done, and in 1545 the whole of the plates of the *Anatomy* and the *Epitome* were issued from the press of John Hereford in London.<sup>b</sup> The text added was that of the *Epitome*, and this is an evidence that the work of Vesalius was reproduced not so much because of its anatomical value as by reason of the artistic excellence of the illustrations. It will be readily understood that the fine execution of Gemini's work<sup>c</sup> gave the people of England a high idea of the value of copper-engraving, and without doubt stimulated greatly this kind of work in the country.

(To be concluded.)

#### CONSERVATIVE TREATMENT OF PYOSALPINX.

KOLLOCK (*International Medical Magazine*, February, 1894) calls attention to the changes made in the treatment of pyosalpinx within the last year or two, and mentions cases treated by the conservative method which have been reported by Polk, Pryor, Krüg, Boldt, and Dudley. He claims that by this method the tube and ovary of the non-affected side and also the diseased tube may often be saved. He says further, "My experience, while limited compared to that of others mentioned, has been sufficient to convince me that the conservative system of practice is bringing us to that period when the mutilations of women, once supposed to be necessary, should cease. This, we think, will be accomplished; as we also believe that abdominal surgery, in the hands of such men as Sänger, Porro, Kelley, Price, and others, will put an end to the barbarous and murderous practice of resorting to craniotomy and embryotomy on the living fœtus." He then reports four cases of pyosalpinx, three of which were entirely relieved without resorting to cœliotomy.

<sup>a</sup> He was probably a foreigner. He signs the preface of his work as Thomas Geminus Lysiensis, though it is not known what Lysiensis signifies.

<sup>b</sup> The title is—*Compendiosa totius Anatomii delineatio aere exarata*—per Thomam Geminum (in forma fol.).

<sup>c</sup> Three editions were published. The first (1545) carries the Arms of Henry VIII. on the title page. The second (Lond., 1552) has the same plates, but the frontispiece had been re-engraved with the portrait of Edward VI., and the "Dieu et mon droit" at bottom of original plate still remains. In the third edition (1559), "printed at London within the Blackefryars," the portrait of Elizabeth replaces that of Edward. Dibdin (*Typographical Antiquities*, Vol. IV., p. 538) remarks that this is the earliest existing portrait of the "Virgin Queen."

## PART II.

### REVIEWS AND BIBLIOGRAPHICAL NOTICES.

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*A Treatise on Ruptures.* By JONATHAN F. C. H. MACREADY, F.R.C.S.; Surgeon to the Great Northern Central Hospital, &c. With Twenty-four Lithographed Plates and Illustrations in the Text. London: Charles Griffin & Co., Limited. 1893. Large 8vo. Pp. 442.

THIS is the most complete work dealing with this subject with which we are acquainted. Mr. Macready has made good use of the exceptional opportunities afforded to him as surgeon to the City of London Truss Society, and he has placed before us a series of tables and statistics which are most instructive and unique of their kind. These tables deal with the incidence of herniæ in the sexes, the relation to age, the preponderance of inguinal over femoral, and the proportion of right to left-sided ruptures. It is a curious fact, brought out strikingly in these latter tables, that while all through life a larger number of ruptures occurs on the right than on the left side, yet it is at the extremes of life that the preponderance is most marked, while from puberty to sixty years of age the relative proportion is only about 1·2 to 1. An interesting chapter deals with the question of heredity as a predisposing cause, and the author arrives at the conclusions that "inheritance is an agent, though, perhaps, a remote agent, in the production of hernia, and that the influence of the two sexes, when equal numbers of ascendants are taken, is nearly equal. . . . The male parent tends to increase the number of males ruptured when compared with the female parent; the female ascendant not only considerably raises the proportion of ruptured among female children, but effects this chiefly by augmenting the number of femoral herniæ. She also tends to increase the number of femoral herniæ in males, and the influences in this respect in both sexes can be traced even to the grand-parent. . . . It has not, however, been possible to determine the actual proportion of the offspring which appears to be affected through inheritance, nor are there any facts whereby

to form an estimate of the proportion of ruptured persons who have the faculty of transmission, if such exists."

Two interesting and instructive sections deal with the relation to herniæ of anomalies of the testis, chiefly of position, and of the processus vaginalis (funicular process); while the relation of the canal of Nuck to inguinal herniæ in the female is also discussed. "If the presence of the canal," writes Mr. Macready, "is of moment in the production of rupture, it is evident that this influence wanes rapidly with the growth of the individual"—a statement based on a large number of observations by Camper, Sachs, Féré, and Wrisberg, who found that the later the age the less often is the canal patent.

Naturally a large portion of the work is devoted to treatment, and especially in the sections dealing with trusses, and with the support by mechanical means of large irreducible herniæ, the surgeon will find a large mass of accumulated information which he would find it difficult to obtain elsewhere. Here again Mr. Macready's practical experience stands him in good stead, and he is enabled to give some most valuable hints for future guidance. The chapter dealing with the operative treatment for so-called "radical cure" is hardly on a par with the rest of the book. Some of the better known operations are very briefly described, and, if we may judge from the fulness of detail given, Macewen's is the author's favourite operation. As to the results obtained or obtainable, the following paragraph discusses and dismisses the subject:—"If there is little difference between the operations in respect to their safety, there appears to be equally little in respect to their efficacy. According to the statements of those who very often practise them, and to the experience of most surgeons, they all, as a rule, cure for a certain time. The duration of the cure is quite unknown to us."

The subject of strangulation is most exhaustively dealt with, both as regards causes, symptoms, and treatment. Probably the question that at present most widely exercises the minds of surgeons in connection with this subject is—how to deal with accompanying lesions of the bowel. Mr. Macready is very definite—"The Rule of Treatment in London at the present day is to form an artificial anus. Many surgeons hold that this treatment is best for all cases of well-defined gangrene, whilst some are at the same time prepared to do primary suture in young and otherwise suitable subjects." And in a note he adds:—"Of twenty-one London



surgeons who have expressed their views upon this subject in public of late years, seventeen are in favour of forming an artificial anus, and four of doing primary suture." We feel sure a few years will revolutionise these figures.

Besides the two great types of herniæ, all the less common and rare forms are dealt with; their anatomy described, and their diagnosis and treatment discussed. It will thus be seen that this really is a complete monograph on the subject, and displays an amount of knowledge and research that is awe-inspiring. Every chapter has added to it a very complete bibliography in which references may be found to all the earliest and most recent contributions to the subject of which it treats, so that Mr. Macready's monograph will prove an indispensable work of reference to all those who are interested either in the history or in the evolution of treatment of ruptures. Added to this, the work is produced in most sumptuous style—paper and type of the best, the latter being of admirable clearness. Nor must we omit a word of praise for the illustrations. There are twenty-four lithographic plates, which resemble copper-plate in their sharpness and definition, the work of Messrs. Danielsson, and we can recommend this style of illustration (taken from photographs) to future authors who are in search of that almost impossible quantity—a competent medical artist.

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*Lectures on the Surgical Disorders of the Urinary Organs.* By REGINALD HARRISON, F.R.C.S., &c., &c. Fourth Edition, re-written. London: J. & A. Churchill. 1893. 8vo. Pp. 588.

THIS is a new and enlarged edition of Mr. Harrison's well-known work on urinary diseases, the last edition of which has been for some time out of print. Many sections have been re-written, and much new matter has been added, bringing the subjects treated of thoroughly up to date. Besides the original Lectures delivered at the Liverpool Royal Infirmary, the present volume embodies as well the Lettsomian Lectures delivered in 1888 before the Medical Society of London, and the Hunterian Lectures delivered at the Royal College of Surgeons in 1891. So that in this alone we have a guarantee that the work embraces the most recent researches in this field of special surgery. At the same time the original clinical form has been preserved; and this healthy dogma-

tism of a teacher, based on long experience and knowledge of the subject with which he deals, is not merely useful to the student, but makes the book much lighter reading. This personal element is one too often looked for in vain in modern text-books. We find them full of footnotes with latest references to "Archiv," "Fortschritte," "Journal," and "Revue." The views of German, Pole, Russ, &c., and all the up-to-date theories are there; but where is the charm of style, the power of literary expression, the intense personality of the teacher that made the writings of Watson, Graves, Stokes, Brodie, and Cooper—to mention no more—as fascinating as the last new sensation from Mudie's?

To one serious defect in Mr. Harrison's book we must direct attention, as it is one that can hardly be overlooked in a treatise which professes to deal with *urinary* diseases. There is no variety of urinary diseases in which our knowledge has so accumulated and advanced during the last decade as in diseases of the kidneys. Not only our knowledge of the various forms of disease, our power of diagnosing one from the other, and our skill in alleviating symptoms have enormously increased, but we have, in the whole field of surgery, no region where the operator has been more busy, or where, in suitable cases and with properly directed manipulative skill, more brilliant surgical triumphs have been achieved. And this very fact renders it all the more startling that by Mr. Harrison this branch of urinary surgery has been practically ignored. Until this defect is remedied the title should be modified by the substitution of "some" for "the" diseases.

Apart from this unaccountable and glaring omission we have nothing but praise for the book. It is well and clearly written, is sufficiently illustrated, and is, as we have already said, thoroughly up to date. The sections dealing with stricture, its modes of treatment, and its consequences, are admirably full and sound in their teaching, as are also those treating of the various forms of enlargement of the prostate, and the mechanical and surgical procedures adapted to their alleviation or cure. It is in such sections as these, often richly illustrated by instructive cases, that the wideness of the author's experience manifests itself most fully, and that the soundness of his judgment most commends itself to the reader.

There is a very good account of supra-pubic cystotomy, but there is one point on which we must differ, and to which we must direct attention. Mr. Harrison advises passing a silk ligature

through the bladder-wall before opening it, in order to enable the operator subsequently to keep the bladder in the wound. This is a quite inadequate step for the purpose, and the majority of bladder-walls operated on are so softened by previous chronic inflammation that a suture passed thus almost invariably tears through, and allows the now contracted bladder to retreat behind the pubes. To obviate this a most essential step is to pass a stout silk ligature right through the skin, muscles, and whole structures of the abdominal and bladder-walls from side to side. The bladder being then opened, the loop of the ligature is sought for, drawn out and divided, the ends of the silk being knotted on the corresponding sides. In this way two "ligature-retractors," as Mr. Treves has happily termed them, are provided by which the opening in the bladder can be controlled, the bladder kept close to the skin opening, and all risk of the tearing of the vesical wall obviated, as the greater portion of the strain comes on the strong and muscular abdominal walls.

On the whole, we can cordially recommend the book in its new dress, and believe that the fourth edition will secure even a wider popularity than that deservedly obtained by its predecessors.

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*The Pathology, Symptomatology, and Treatment of Hemorrhoids, Simple and Complicated.* By THOMAS H. MANLEY, M.D.;  
Visiting Surgeon to Harlem Hospital, New York.

WE have from time to time waded through the lucubrations of Dr. Thomas H. Manley without finding anything worthy of being placed before our readers. But now we think it only fair to give them a warning in one of the by-ways of periodical literature. *Ex uno disce omnes.* Seldom has it been our fortune to meet compressed into a like compass so many grammatical, ætiological, and pathological errors. One of the opening statements is that "Hemorrhoidal dilatation of the veins of the rectum I have found so common, in the living and dead subject after adult years are attained, that I have come to regard it as practically physiological." But he adds—"They constitute a disease only when they persue (*sic*) the seat of pathological processes, or of an usual type, when we have an atypical condition, or we are in the presence of *complications*." How a physiological condition constitutes a disease when it "persues" the seat of pathological

processes; or how we arrive at "an usual type" when we have "an atypical condition," we must leave to the author to explain in future papers. Next under the "anatomical division of hemorrhoids" we find a class called "mixed;" and under the "pathological division" we find "bleeding hemorrhoids." We always thought bleeding an accidental accompaniment of a pathological process, but once more "we live and learn." A little further on we learn that "hemorrhoids become the seat of pathological changes chiefly through *infection*," and that "the most rebellious types of hæmorrhage, from so-called internal piles, are often dependent on a papilomatous (*sic*) or angiomatous state of the arterioles in the submucosa, just within the verge." What is an arterial "*papiloma*"? "A varicose state of the veins of the leg causes cutaneous and muscular atrophy; in the spermatic cord a wasting of the testicle," (?) therefore *à priori* a varicosity of the hæmorrhoidal veins ought to lead to atrophy of the mucous membrane and so to cure of the piles! The next sentence we may leave as a puzzle to be solved at will by our readers. "In the rectum the sphincter *externus* (*sic*) and levator ani suffer from the effects of malnutrition, when the walls of the afferent vessels give way." We did not know before that either of the muscles referred to was *in* the rectum, though undoubtedly related to it. But mark the results. "A low grade of inflammation supervenes in which there is a free hyperplasia into (*sic*) the interfascicular spaces and parenchyma of the muscle fibre. This undergoes organisation with fibrous changes, so that the external sphincter, in all cases of hæmorrhoids, undergoing pathological changes, will be found greatly thickened of a dense consistence (*sic*) and but moderately distensible." The last statement is certainly the reverse of the usual condition. Again, we learn that the first pathological changes are caused by the introduction of "micro-gymes" (whatever they may be), which "penetrate the intima;" but we are not told the source of their origin. Much nonsense is talked about the causal relation of tuberculosis, syphilis, and cancer to piles. As a sample, take the following in regard to epithelioma:—"So many cases have come under my observation in which cancerous disease has followed in the wake of hemorrhoids and *the proliferating tissue has maintained the character of piles in the embryonic elements* that I now no longer have any doubt of the frequent and direct relation." The italics are ours. A tumour that reproduces the characters of piles, and is at the



same time malignant, is one we have not hitherto seen or read of, but we are glad to make acquaintance with it. "Endeavor," "veinous," "sequellæ," "sparcity," "sphincteric dilatation," and "pulmonary anesthetics" are among the gems of orthography that brighten the pages. We have given too copious extracts to allow us to quote the author on treatment, and the curious will have to learn from his own pages the mysteries of *pressure manipulation* in the cure of piles.

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*Two Great Scotsmen, the Brothers William and John Hunter.* By GEORGE MATHER, M.D., F.F.P.S.G. Glasgow : James Maclehose and Sons. 1893. Pp. 251.

It is not long since a learned professor, lecturing in this city, declared that, if proof were needed that the poet Sedulius was an Irishman, it was furnished by the fact that Dublin was the only important city in civilised Europe which had not produced an edition of his works. It is not Dublin alone that is *incuriosa suorum*. The author of this biography sought in vain "for a single pamphlet issued from the Glasgow press telling the story of the Hunters." London, to which, it must be said, the brothers gave the labour of their lives, has not been unmindful or ungrateful; Philadelphia has been encomiastic; even Edinburgh has produced, we are told, an essay inspired by a memory of John Hunter, but Glasgow has hitherto been silent. Dr. Mather has gone far to wipe out this reproach by publishing the handsome volume before us. The principal events of the great brothers' lives are here clearly told by an appreciative biographer; full of admiration for his subject, but discriminating and free from the *lues biographica*.

The history of the Hunterian Museums is not the least interesting portion of the contents of this volume. It is a remarkable fact that London is indebted to outsiders for the three greatest of her museums. An Irishman founded the British Museum; the magnificent collection in Lincoln's Inn Fields was mainly the work of John Hunter; the Museum of the College of Physicians was the collection of Dr. Matthew Baillie, a nephew of the Hunters, and a brother of Joanna Baillie, the poetess. William Hunter's Museum is one of the treasures of Glasgow.

The great object of this great man's life was to establish in London a museum, to aid in the advancement of medicine and surgery. With this in view he applied to Lord Bute, then Prime

Minister, for a grant of a site, offering to expend £7,000 on a suitable building, and to endow a professorship of anatomy. The zeal of British Governments for science was no greater in 1770 than it is in 1894; the site was refused and the offer declined. Undismayed by this rebuff, the old man bought a spot in Windmill-street, and spent £8,000. "I have collected," he said, "such an anatomical apparatus as was never brought together in any age or country." In his will he directed that after the lapse of a certain time the collection should be transferred to Glasgow. It was transferred in 1807. It may not be superfluous to say that this splendid museum is not confined to anatomical preparations or other objects of professional interest. It includes manuscripts, printed books, paintings, engravings, &c. For a portion of the collection of coins<sup>a</sup> the British Museum offered £20,000, when the refusal of Government to purchase the whole museum for London—a refusal which we cannot pretend to regret—compelled its removal to the city in whose neighbourhood the generous collector was born. To the honour of Dr. Matthew Baillie we should add that, under William Hunter's will, he had—and waived—first claim to the museum, on the failure of Government to secure it for all-devouring London.

John Hunter "directed by his will that his museum should be offered to the British Government on reasonable terms; in case of their refusal, that it should be sold in one lot to some foreign power, or otherwise disposed of as his executors might direct." Pitt was approached on the subject, and exclaimed—"What, buy preparations? I have no money to buy gunpowder!" However, after six years' meditation—the collection, meantime, being kept together and in order by Clift—the museum was purchased for £15,000, having cost £70,000. Then there was difficulty in finding a body willing to accept it as a gift! It was refused by the Royal College of Physicians, by the Royal Society, and by the British Museum. The Corporation of Surgeons had the offer next; and gladly accepted a collection which is now the glory of the Royal College of Surgeons of England, chartered in the year following their acceptance.

Visitors to the museum in Lincoln's Inn Fields cannot fail to notice an Irish contribution to its treasures—the skeleton of O'Brien, the Irish Giant. For this, or rather for the body which

<sup>a</sup> Dr. Mather informs us that the University Commissioners lately proposed to sell this magnificent numismatical treasure!

supplied it, John Hunter paid £500. The story is worth repeating. O'Brien did not want to be dissected by John Hunter, who had his eye upon him. In his will he left £200 to certain fishermen to take his body out to sea and drop it there. When he died John Hunter missed him, made inquiries, discovered the measures that had been taken, found the fishermen and said:—"Drop the body into the sea, and get your £200; but pull it out again, and bring it to me. I will give you £500."

The disgraceful story of the destruction of Hunter's invaluable manuscripts by his brother-in-law, Sir Everard Home, is briefly told by Dr. Mather. It was well known, and needs no further notice here. About the year 1789 John Hunter was "admitted a member of the Royal College of Surgeons of Ireland."

William Hunter is buried in the rector's vault of St. James' Church, Piccadilly—a church, for other reasons also, well worthy of a visit: itself one of Wren's finest constructions, and containing some of Grinling Gibbons' best work. His memorial tablet is placed between those of the great physicians Sydenham and Bright. His greater brother was buried privately in the vaults of St. Martin's-in-the-Fields. Sixty-five years afterwards—on the 28th March, 1859—his remains were removed to Westminster Abbey, and lie in the north aisle, close to the grave of Ben Jonson. The translation, as is well known, was due to the exertions (and sufferings) of the late Frank Buckland. Learning that the parochial authorities contemplated the removal and re-interment of the accumulated contents of the vaults, he determined to search for and rescue John Hunter's coffin. He spent sixteen days in the nauseous exploration. He examined 3,060 coffins, and discovered the object of his search when only three remained in the vault. The immediate result to him was "a severe attack of illness which prostrated him for some time."

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*Dr. Chesterfield's Letters to his Son, on Medicine as a Career.* By  
SIR WILLIAM B. DALBY. Reprinted from *Longman's Magazine*.  
London: Longmans, Green, & Co. 1894.

WE doubt if it was worth while to reprint these papers from the pages of a popular magazine, although they are pleasantly written and contain some shrewd observations and advice. Four subjects are dealt with—the Physician, the Surgeon, the Specialist, and the General Practitioner. We were struck with the importance

which the author—very justly—attaches to a love for children as a qualification for treating children successfully. “Are you fond of children?” he says. “If you are not you will never understand their little ways, and be able to manage them, or examine them, or be of the least use to them. They will hate the sight of you, and their mothers will loathe you. (It is no use to pretend to be fond of them if you are not; they will find you out in a moment).” Why the writer should profess to “dislike didactic advice,” which appears to be the *farrago libelli*, is not apparent—any more than why he should attribute to President Lincoln Hosea Biglow’s aphorism, quoted from his grandfather—“Don’t never prophesy unless you know;” but after this profession he gives some excellent “didactic advice,” to which others besides general practitioners will do well to hearken. “I feel constrained for once to give you a golden rule. It is never to speak ill of any of your fraternity, whatever you may think. You will do yourself no good, and it will only be thought that you are jealous.”

*The Medical Annual and Practitioner's Index: a Work of Reference for Medical Practitioners.* 1894. Twelfth Year. Bristol: John Wright & Co. 8vo. Pp. 799.

THIS work grows in excellence each year, and is now everywhere recognised as a standard book of reference.

The general arrangement is unaltered from that of former issues. Part I. is devoted to Therapeutics, and includes a dictionary of new remedies placed in alphabetical order, together with a review of therapeutic progress for 1893, by Professor H. A. Hare, M.D., of the Jefferson Medical College, Philadelphia, and editor of *The Therapeutic Gazette*.

Part II. deals with New Treatment, and includes a dictionary of new treatment in medicine and surgery, likewise arranged in alphabetical order, and running from “Abdominal Surgery” to “Worms.” This constitutes by far the largest portion of the book, extending to almost 550 pages. One of the most comprehensive contributions to this part is an exhaustive article on Insanity by Dr. James Shaw. The subject which he especially discusses is facial expression as one of the means of diagnosis and prognosis in mental diseases. Neither trouble nor expense seems to have been spared in illustrating this article by means of photographs and coloured sketches.



In Part III., devoted to miscellaneous topics, we find an article on "Sanitary Science," by Dr. Joseph Priestley, D.P.H., Medical Officer of Health for Leicester; sections on dietetic preparations, the progress of pharmacy, and new inventions.

At the end of the volume we find the usual alphabetical lists of lunatic and idiot asylums and homes for inebriates in Great Britain and Ireland, of training institutions for imbeciles, and of hydropathic establishments; also a list of the principal medical works and new editions published during 1893; and, lastly, the "Medical Annual Official and Trade Directory," in which much useful information is contained within a narrow compass.

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*The Medical Reporter. A Record of Medicine, Surgery, Public Health, and of General Medical Intelligence.* Edited by LAWRENCE FERNANDEZ, M.D., L.R.C.P & S. Calcutta.

THE growth of the unofficial constituent of the medical profession in India has been very remarkable within the last ten years; and the appearance of professional periodicals, manned by medical men unconnected with Government, and devoted to the interests of the unofficial practitioner, is a healthy symptom. We do not remember to have previously seen this monthly, now in its third volume. We learn from the number before us that it is proposed to form an Indian Medical Association, the rules being here published as a Supplement. We observe, also, that the prospects of the foundation of a Pasteur Institute in India are excellent, the Government of India and the Provincial Governments being favourable. We welcome this accession to Indian medical journalism, and regret that Madras has fallen behind the other Presidency capitals in professional literature.

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IL NUOVO CIMENTO.

WE have received the first two numbers of the third series of this monthly periodical published at Pisa. It was originally founded—thirty-four volumes ago—by SS. C. Matteucci and R. Piria, and is now conducted by SS. Felici, Battelli, and Volterra. It is devoted to mathematical and physical science, and claims to be the only Italian journal representing Physics. The contents are technical in the highest degree and "caviare to the general." Its papers are in no way related to practical medicine.

## PART III.

### SPECIAL REPORTS.

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#### REPORT ON PUBLIC HEALTH.<sup>a</sup>

By SIR CHARLES A. CAMERON, M.D.; D.P.H., Camb.; M.R.C.P.I.;  
Ex-President Hon. Dip. Public Health, and Professor of  
Hygiene and Chemistry, R.C.S.I.; President of the Society  
of Public Analysts; Medical Officer of Health for Dublin;  
Hon. Member of the Hygienic Societies of France, Belgium,  
Paris, Bordeaux, the Academy of Medicine, Sweden, and of  
the State Medical Society of California, &c.; Examiner in  
Sanitary Science, Royal University of Ireland; Member of  
the Army Sanitary Committee.

#### POISONOUS EFFECTS OF CARBONIC ACID AND OTHER GASES.

WE have always been led to suppose that a very small proportion of carbonic acid in air proves rapidly fatal to life. In Roscoe's Chemistry it is stated that even 3 to 6 per cent. in air prevents combustion of a candle. Dr. Angus Smith says that 4 per cent. suffocates. Mr. Joseph H. Wilson, in a lecture delivered in the Philadelphia College of Pharmacy, and published in the *American Journal of Pharmacy*, Vol. LXV., No. 12, gives us the results of some extraordinary experiments with carbonic acid and oxide, and other gases on animal life. He claims great exactness in the conduct of his experiments on account of the means which he took to ensure the proper proportions of the gases and air which he used, and to maintain a continuous supply of them to the animals experimented with.

The apparatus used by Mr. Wilson is termed the "Shaw gas tester." It consists of two pumps, with pistons attached to a graduated arm, so that one cylinder can be set to pump, say, 10 per cent of gas, and the other 90 per cent. of air. The products of the two pumpings are mixed and forced through an ejector

<sup>a</sup> The author of this Report will be glad to receive any books, pamphlets, or papers relating to hygiene, dietetics, &c. They may be forwarded through the agencies of the Journal.

before being delivered into the vessel in which the experiments are being made. Mr. Wilson says that this apparatus is the most perfect of its kind in the world, and that it is to gases what scales and weights are to solids.

A rabbit was placed in a glass cylinder, and was supplied with a mixture of 90 per cent. of atmospheric air, and 10 per cent. of carbonic acid. After breathing this mixture for an hour and seven minutes the only effect observed on the animal was exhilaration; on being released, and placed amongst other rabbits, it exhibited more liveliness than any of them. In another experiment, in which the carbonic acid was increased to 25 per cent., the result was the same. After inspiring this mixture for an hour the rabbit was as lively as before.

In a mixture of equal parts of air and carbonic acid, a rabbit began to gasp in two minutes, and died in seventeen minutes. In a mixture of 75 per cent. of carbonic acid and 25 per cent. of air, death took place in ten minutes. Experiments with mice led the author to the conclusion that small animals resist the toxic effects of carbonic acid less than large ones. Nevertheless, 25 per cent. of carbonic acid in air did not prove fatal to a mouse.

As to carbonic oxide, Mr. Wilson's experiments show that the gas is much more poisonous than carbonic acid. This fact has already been thoroughly established, but Mr. Wilson shows that the toxic properties of carbonic oxide is not so great as has been alleged. The late Dr. Letheby asserted that 0.5 per cent. of carbonic oxide killed small birds in three minutes, and 2 per cent. rendered guinea-pigs insensible in two minutes.

Mr. Wilson found, 1st, that 2 per cent. of the gas did not prove fatal to a rabbit in 45 minutes, but the animal became semi-comatose; on being placed in the pure air it was capable of maintaining its equilibrium. A rabbit placed in 2.5 per cent. of carbonic oxide, and 97.5 per cent. of air, became semi-comatose in five minutes, but revived almost immediately on being placed in pure air.

A mouse placed in a mixture of four parts of carbonic oxide and 96 parts of air, died in four and a-half minutes.

An atmosphere containing 1 per cent. of carbonic oxide produced in thirty minutes no effects upon a mouse; but the percentage of CO increased to 2 per cent. proved fatal in ten minutes upon them. The poisonous effects attributed to the gases evolved from lime kilns during the preparation of lime and the fumes of

burning charcoal are really chiefly, and, perhaps, sometimes wholly, produced by carbonic oxide and not by carbonic acid.

In Watt's Dictionary of Chemistry, 1 part of sulphuretted hydrogen in 1,000 parts of air is said to be fatal to the lower animals. Mr. Wilson found that 0·5 per cent. killed a rabbit in three minutes, and 0·2 per cent. in ten minutes, and 0·1 per cent. in thirty-seven minutes. Exposure to air, containing  $\frac{25}{1000}$  of one per cent. of  $H_2S$ , produced no apparent effect on a rabbit.

Mr. Wilson found that coal-gas to the extent of 10 per cent. killed a rabbit in thirteen minutes, and air containing 5 per cent. of this gas in thirty minutes. As the gas was made in part by the action of water on carbon, it was rich in carbon monoxide (carbonic oxide), and, therefore, these experiments are not conclusive as to the effect of coal-gas made altogether from coal, and containing small quantities of carbonic oxide. These experiments are very interesting; they prove that sulphuretted hydrogen is a deadly poison, and that even a minute quantity in the air is dangerous to health. The danger likely to arise from leakages of coal-gas are exemplified, and the bad reputation of carbonic oxide is only slightly modified. The experiments with carbonic acid seem to show that large quantities of that gas can be breathed with impunity. Indeed, it has often struck us that the men engaged in the manufacture of aerated waters must breathe an atmosphere highly charged with carbonic acid gas, and yet it seems to have no bad effect upon them.

#### SANITARY MEASURES IN INDIA.

We have been much interested by the perusal of Reports on the Sanitary Measures in India, in 1890-91 and 1891-92. They have been collected by the Indian Government, and presented to Parliament in the shape of two Blue Books.

The volume for 1891-92 is the more interesting, as it contains some of the more important results of the Census of 1891.

In the ten provinces into which India is divided, the highest birth-rates were registered in Berar and the Central Provinces, where it was 43·09 and 42·8 per 1,000 of the people. The lowest rate was in Lower Burma, where it was only 20 per 1,000, but, of course, this was due to defective registration. On the whole it would appear that the birth-rate in India is much higher than in Europe.

The following table shows the death-rates in the ten Provinces :—



|                                  | CHOLERA      |                 | SMALL-POX    |                 | FEVERS       |                 | DYSENTERY AND DIARRHŒA |                 | DEATHS FROM ALL CAUSES |                                                  |       |
|----------------------------------|--------------|-----------------|--------------|-----------------|--------------|-----------------|------------------------|-----------------|------------------------|--------------------------------------------------|-------|
|                                  | Total Deaths | Ratio per 1,000 | Total Deaths | Ratio per 1,000 | Total Deaths | Ratio per 1,000 | Total Deaths           | Ratio per 1,000 | Total Deaths           | Ratio per 1,000 of Population under registration |       |
|                                  |              |                 |              |                 |              |                 |                        |                 |                        | 1891                                             | 1890  |
| Bengal, excluding Calcutta .     | 229,575      | 3.26            | 16,193       | 0.23            | 1,333,395    | 18.94           | 43,183                 | 0.61            | 1,896,261              | 26.94                                            | 24.48 |
| Calcutta . . . .                 | 1,553        | 3.32            | 13           | 0.02            | 4,675        | 10.02           | 1,433                  | 3.07            | 13,033                 | 27.94                                            | 27.93 |
| North-Western Provinces and Oudh | 169,013      | 3.60            | 26,355       | 0.56            | 1,033,059    | 22.02           | 49,586                 | 1.06            | 1,460,732              | 31.14                                            | 37.27 |
| Punjab . . . .                   | 10,107       | 0.49            | 3,426        | 0.17            | 442,254      | 21.52           | 12,152                 | 0.59            | 598,789                | 29.13                                            | 46.87 |
| Lower Burma . . . .              | 2,400        | 0.52            | 1,326        | 0.29            | 35,658       | 7.76            | 4,162                  | 0.91            | 73,190                 | 15.93                                            | 17.40 |
| Central Provinces . .            | 21,312       | 2.42            | 748          | 0.08            | 190,550      | 21.61           | 20,889                 | 2.37            | 313,364                | 35.54                                            | 32.52 |
| Coorg . . . .                    | 7            | 0.04            | 476          | 2.75            | 2,703        | 15.61           | 172                    | 0.99            | 3,771                  | 21.79                                            | 25.32 |
| Assam . . . .                    | 23,882       | 4.76            | 2,361        | 0.47            | 75,965       | 15.13           | 14,418                 | 2.87            | 150,156                | 29.91                                            | 29.64 |
| Madras . . . .                   | 98,773       | 3.5             | 41,322       | 1.4             | 247,029      | 8.6             | 34,223                 | 1.2             | 747,553                | 26.2                                             | 22.80 |
| Bombay . . . .                   | 17,850       | 0.95            | 1,491        | 0.08            | 368,913      | 19.60           | 37,728                 | 2.00            | 513,132                | 27.26                                            | 28.18 |
| Berar . . . .                    | 7,958        | 2.8             | 34           | 0.01            | 49,850       | 17.5            | 22,007                 | 7.7             | 115,558                | 40.6                                             | 35.49 |
| Total . . . .                    | 582,430      | 2.81            | 93,747       | 0.45            | 3,784,051    | 18.27           | 239,953                | 1.15            | 5,885,539              | 28.42                                            | 30.14 |

The death-rate varied from 40·6 per 1,000 in Berar, to 15·93 in Lower Burma. In the latter case the registration is declared to be very defective. The average rate in the ten Provinces was 28·42. The rate in the Central Provinces was 35·54, and in the North Western Provinces and Oudh, 31·14.

As in the case of the birth-rate, so also in that of the death-rate, there is an excess as compared with Europe.

The causes of death in India constitute an interesting study. In Europe the zymotic diseases occasion not more than 20 per cent. of the total mortality. In these countries not more than 12 to 15 per cent. of the deaths are ascribed to fevers. In Dublin only about 10 per cent. of the deaths result from the principal zymotic maladies. In India, on the contrary, a large proportion of the deaths are ascribed to zymotic diseases. In 1891 the general death-rate was 30·14 per 1,000, whilst the fever death-rate was no less than 18·27. To this must be added a death-rate of 2·81 from cholera, and 0·45 from smallpox. The rate from fevers, cholera, and smallpox combined was 21·53, or more than two-thirds of the total death-rate.

In Bengal the principal zymotic diseases caused deaths in the ratio of 22·43 per 1,000 of the population, leaving for all other diseases, accidental deaths, suicides, &c., only a rate of 4·51 per 1,000. If we deduct from this 0·61 per 1,000, the rate for dysentery (a zymotic disease), the 4·51 rate becomes further lowered to 3·9.

In 1891 70 per cent. of the deaths in the Punjâb were ascribed to fevers, chiefly malarial. It is an astounding fact that the death-rate from fevers (excluding smallpox, cholera, dysentery, and diarrhœa) is greater in Bengal than the total death-rate in England.

There is evidently a vast field for the work and reforms of the sanitarian in India. The fevers are admitted to be preventable diseases. In Europe they have been steadily declining during the present century. One of them—namely, typhus, has almost disappeared. If their ravages were reduced in India to the same extent as in Europe the Indian death-rate would be extremely small. Of course, those who do not die from fevers die from some other diseases, and the reduction of the mortality due to the former would be followed by an increase in the mortality caused by other diseases. Still, as the victims to fevers are largely composed of young persons, the lessening of the fever death-rate

would not be followed by an equivalent increase in the mortality due to other maladies. The lessening of the fearful mortality caused by fever would be followed by a substantial decline in the general death-rate.

With respect to vaccination, we learn that the proportion of the population protected was equal to 26·78 per 1,000; 67·9 per cent. of the children born in Berar (which seems to be a progressive place) were successfully vaccinated. In the North Western Provinces and Oudh only 20 per cent. of the children born in 1891 were successfully vaccinated.

In 1891 there were 67,030 European troops in India, and their death-rate was 15·89 per 1,000. In the period 1877-79 the rate was 19·34; 1881-90, 14·24; and in 1890, 13·84. In 1891 20·4 per 1,000 of the troops were admitted to hospital suffering from typhoid fever, and from all causes 80 per 1,000; of the total deaths 36 per cent. were due to enteric fever, and 16 per cent. to cholera; 5·76 per 1,000 of the troops died from enteric fever, as against 4·91 in the preceding year. In Bengal 40 per cent. of the deaths were caused by enteric fever, and 16 by cholera. In Madras the enteric fever death-rate was 20 per cent. of the total rate from all causes, whilst the rate from cholera was 11 per cent. It is clear that our soldiers suffer severely from enteric fever when stationed in our great dependency.

The percentages respectively of enteric fever, dysentery, hepatitis, and pneumonia, of the total deaths in the three great provinces, are shown in the following table:—

1891.

| —               | Bengal | Madras | Bombay |
|-----------------|--------|--------|--------|
| Enteric fever . | 39·4   | 21·2   | 39·2   |
| Hepatitis .     | 6·1    | 10·9   | 5·0    |
| Dysentery .     | 2·6    | 3·1    | 3·3    |
| Pneumonia .     | 3·0    | 4·7    | 3·3    |

It appears that the newly-arrived soldier is much more liable to contract enteric fever than the soldiers who have been for some time in the country, and that an increased length of service rapidly diminished the tendency to the disease.

The following table is of interest:—

*Statement showing the Death Ratios of the European Army from Enteric Fever at different Ages, together with Ratios of Liability to it.*

| YEAR   | MORTALITY FROM ENTERIC FEVER AND RATIO OF LIABILITY TO IT AT DIFFERENT AGES |                         |                  |                         |                  |                         |
|--------|-----------------------------------------------------------------------------|-------------------------|------------------|-------------------------|------------------|-------------------------|
|        | 24 and under                                                                |                         | 25 to 29         |                         | 30 to 34         |                         |
|        | Deaths per 1,000                                                            | Percentage of liability | Deaths per 1,000 | Percentage of liability | Deaths per 1,000 | Percentage of liability |
| 1889 . | 9·81                                                                        | 64·50                   | 3·25             | 21·37                   | 1·83             | 12·03                   |
| 1890 . | 7·78                                                                        | 65·93                   | 2·84             | 24·07                   | 1·18             | 10·00                   |
| 1891 . | 9·11                                                                        | 68·65                   | 2·97             | 22·38                   | ·71              | 5·35                    |

A remarkable immunity of women from certain diseases is shown in various parts of India. For example, in 1891 no deaths from diseases of the respiratory organs or from tubercle occurred amongst the women attached to the army.

It is remarkable that whilst enteric fever is ten times more fatal amongst European troops in India than at home, this disease is almost unknown in the native army. In 1891 only 17 deaths from it occurred in the whole of the Indian army, numbering 126,800 men. In 1891 the enteric fever death-rate was 5·76 per 1,000 amongst the European troops, and 0·13 amongst the native soldiers. On the other hand, the deaths from ague were 0·18 per 1,000 amongst the Europeans, and 1·32 per 1,000 amongst the native troops.

These volumes give an account of the numerous sanitary works undertaken or carried out in 1890-91, and which, no doubt, will help to lessen the ravages of zymotic diseases in this vast empire.

#### DETECTION OF HORSE-FLESH.

There seems to be little doubt as to the occasional sale of horse-flesh—not under its proper name, but as the flesh of other animals. On the Continent this fraud is said to be by no means uncommon. Brantizam and Edelmann have published<sup>a</sup> a process for the detection of horse-flesh, based on the use of the well-known reaction of iodine with glycogen. Now horse-flesh always contains glycogen, and therefore a decoction of the flesh can be tested for this substance. Finely comminuted it is boiled with four times its weight

<sup>a</sup> Phar. C. H. 1893. XIV. 557.



of water, and the resulting broth treated with dilute nitric acid, which precipitates the albuminoids. Then by filtration a pretty clean clear liquid is obtained, and brought into contact with a saturated solution of hydriodic acid. The liquids, where they come in contact, form a red or violet ring. If meat does not give this reaction, of course it is not horse-flesh. Should water fail to get the glycogen into solution, a solution of caustic potash will dissolve it. The potash must be 3 per cent. of the weight of the flesh.

#### VAGRANTS AND THE DISSEMINATION OF DISEASE.

Dr. Henry Armstrong, the able Health Officer of Newcastle-on-Tyne, read an interesting paper upon the above subject before the Incorporated Society of Medical Officers of Health on the 15th of January last. He pointed out that the introduction of smallpox into Newcastle in December, 1892, was due to a tramp, who, whilst affected with that disease, was admitted to the Workhouse. He found often that tramps also introduced this serious disease into nightly lodging-houses, occasioning thereby a great deal of trouble and some expense to the sanitary authority. Dr. Armstrong points out numerous instances in which smallpox was introduced into other towns by tramps and vagrants, and considers that there is a gross defect in the present system of the administration of Preventive Medicine, viz.—“that a week allows the broadcast spread of disease by vagrants.” It seems that Dr. Armstrong learned, from inquiries which he made, from Medical Officers of Health, that of 63 places invaded by smallpox 59 per cent. had the infection conveyed into them by vagrants.

The replies to inquiries made by Dr. Armstrong from Health Officers are summarised by him as follows:—

1. Where an epidemic is prevalent it should be possible to prevent vagrants visiting the district, and to arrest them on infringement of this condition.

2. Only a county medical officer of health can deal with diffusion of disease through a county.

3. Vagrants should be systematically examined on entering the union.

4. Strict inspection should be maintained, with history of routes travelled.

5. Make compulsory the medical inspection of all vagrants with the view of discovering mild cases which might otherwise escape notice.

6. Attend closely to the common lodging-houses, especially by night.

7. Each common lodging-house should provide a free bath, and each vagrant should have fresh water.

8. Common lodging-houses might be closed for a time.

9. The establishment of model lodging-houses in towns should be general.

10. Sanitary authorities and Poor Law and Union authorities should be compelled to provide means of isolation.

11. Adopt the separate cell system at all unions.

12. Vagrancy should, as far as possible, be prevented, say, by retaining all tramps who enter workhouses for a fortnight, and compelling them to work whilst there.

13. Vagrants should be detained under observation.

14. The medical officer of health should keep a spare room for suspected vagrants.

15. Suspicious cases should be isolated immediately.

16. Vagrants should not be allowed to invest the crowded precincts of police stations for orders for admission to the workhouse. If the police continue to give these orders a separate place should be provided for the purpose.

17. Every vagrant should be re-vaccinated ; better still, everyone else.

18. Re-vaccination of all vagrants lodged in a casual ward should be compulsory. If they had the choice between being re-vaccinated or doing their task they would, in the majority of cases, prefer the former.

19. Vagrants should be allowed to travel about on ticket or pass only.

20. There should be communication with prisons, workhouses, common lodging-houses, masters of canal boats, &c., directing attention to prevalence of epidemic and local powers relating thereto.

21. More attention should be paid to the migratory habits of other persons than vagrants.

There is certainly wanted some law to control the movements of vagrants and tramps, so as to prevent them from being the vehicle of infective disease, especially in epidemic times. Mere vagrancy appears to be a condition which subjects a person practising it to the surveillance of the police, but the sanitary authorities seem to have no special powers in regard to vagrants ; the sooner they have the better for the community.

#### RECREATION.

Mr. William Odell, F.R.C.S., gave an address on "Recreation" at the Torquay Natural History Society, which he has published in pamphlet form.<sup>a</sup> It mainly consists of extracts from the

<sup>a</sup> London : Simpkin, Marshall, Hamilton, Kent & Co. 1893.

writings of eminent medical men, or from their correspondence with Mr. Odell. The advantages of regulated exercises are well described:—

Sir William Savory says:—"The necessity of exercise to the preservation of health is allowed by everyone, and yet, perhaps, few realise the importance of the changes it involves. Take, for instance, the effect of muscular exercise on the respiration. In ordinary circumstances of rest, a man draws in 480 cubic inches of air per minute; if he walks at the rate of four miles an hour, this quantity will be increased five-fold, so as to amount to 2,400 cubic inches in the same time. Or to put it in another way. It was found by experiments that a man at rest inspired per hour 27 cubic feet of air. This represents the absorption of 416·8 grains of oxygen, and the exhalation of 603 grains of carbonic acid, equal to 164 grains of carbon. But during exercise, in the same period, he inspired 64·9 cubic feet of air, which represents the absorption of 1,829·6 grains of oxygen, and the exhalation of 2,501 grains of carbonic acid, equal to 682 grains of carbon. From these, and similar calculations, it would seem that fair exertion for ten hours a day would increase the elimination of carbon in twenty-four hours by about one-third over the amount in the same time during rest. It is highly probable that this large formation of carbonic acid takes place chiefly in the muscles. But the quantity of carbon excreted is so great, and in such excess over the nitrogen, that it cannot be accounted for by the destruction of the proper substance of muscular tissue only. Either fat or some other non-nitrogenous body rich in carbon which is present in the muscles must be consumed by their action.

"Certain rules follow on this fact. During exercise, the action of the lungs should be thoroughly free. No impediment should be offered to the full play of the chest by dress or any other means. And it is obvious that the increase of loss demands an increase of supply in the form of proper food and fresh air."

Sir James Paget states:—

"In the general meaning of recreation we include two chief things—namely, the cessation of the regular work of our lives, and the active occupation, whether of body or mind or both, in something different in which we find pleasure. From both alike we expect and may obtain refreshment, that is, renewed fitness for our regular work. In the former of these parts of recreation, speaking generally, the structures of our body which have been at work are left to rest or are exercised in a different manner; in the latter, those which have not been at work are brought into activity . . . Man alone refreshes himself by changing his method of activity; man alone has habitual active recreations. And it may be

generally observed, among the several races of men, that those which are the most highly cultivated, and whose occupations are the most various, strong and intellectual, have the most numerous and most active recreations.

"Now, I think that if we look for the characteristics which may be found in all good active recreations, and on which their utility chiefly depends, we shall find that they all include one or more of these three things : namely, uncertainties, wonders, and opportunities for the exercise of skill in something different from the regular work. And the appropriateness of these three things seems to be, especially, in that they provide pleasant changes which are in strong contrast with the ordinary occupations of most working lives, and that they give opportunity for the exercise of powers and good dispositions, which, being too little used in the daily business of life, would become feeble or lost. . . ."

A useful table, by Sir J. Crichton Browne, referring to hours of sleep, is given as follows :—

|                            |                             |
|----------------------------|-----------------------------|
| 4 years of age - 12 hours. | 14 years of age - 10 hours. |
| 7 " " - 11 "               | 17 " " - 9½ "               |
| 9 " " - 10½ "              | 21 " " - 9 "                |
| 28 years of age - 8 hours. |                             |

#### RECURRENCE OF MAMMARY CANCER.

THE *Provincial Medical Journal* holds its place in the first rank of English medical periodicals. The March number contains a good likeness of Dr. Russell Reynolds. From a paper by Mr. Roger Williams we extract the following table, based on 599 cases of recurrent mammary cancer, showing the periods at which recurrence is probable :—

| Interval between operation and first obvious recurrence | Total 599 cases | Per cent. | Interval between operation and first obvious recurrence | Total 599 cases | Per cent. |
|---------------------------------------------------------|-----------------|-----------|---------------------------------------------------------|-----------------|-----------|
| Under 3 months                                          | - 238           | 39·7      | 12 to 24 months                                         | - 64            | 10·8      |
| 3 to 6 months                                           | - 117           | 19·5      | 2 to 3 years                                            | - 25            | 4·2       |
| 6 to 12 months                                          | - 129           | 21·5      | Over 3 years                                            | - 26            | 4·3       |

#### CASTOR OIL.

It takes four men to give an elephant castor oil, the dose being ʒ cxxviij. We have known it to take three women and two men to give a small boy castor oil, dose only ʒj.—*Gaillard's Med. Jour.*



## CLINICAL RECORDS.

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*Notes on Uncommon Forms of Skin Diseases.*<sup>a</sup> By R. GLASGOW PATTESON, B.A., B. Ch., Univ. Dubl.; F.R.C.S.I.; Surgeon in charge of the Skin Department, St. Vincent's Hospital, Dublin.

### VII.—ERYTHÈME INDURÉ DES SCROFULEUX (BAZIN).

IN previous numbers of these notes I have from time to time dwelt on some of the features of the large and polymorphous group of erythematous affections, and it is to one of its less known, though hardly less rare, varieties that I now desire to attract attention. In one sense it may be looked upon as a new disease; for, though described by Bazin so long ago as 1861, it had for a long time been overlooked or forgotten, and it is only within the past couple of years that the attention of dermatologists in these countries has been specially drawn to it, and a very considerable number of cases reported.

Bazin's description of the disease is so full and striking that it can hardly be improved upon. In his *Leçons sur la Scrofule* (1861), p. 146, under the head of "Scrofulides érythémateuses," he writes as follows:—"L'érythème induré, de nature scrofuleuse, n'est pas rare; il se caractérise par des plaques rouges, indurées, sur lesquelles le doigt appliqué fait momentanément disparaître la rougeur, qui ne tarde pas à reparaitre au bout de quelques instants. On sent à la peau et sous la peau une induration qui s'enfonce plus ou moins profondément dans le tissu cellulaire sous-cutané. La rougeur, plus ou moins foncée, assez souvent violacée, plus marquée au centre, se fond insensiblement sur le circonférence avec la couleur normale de la peau. Il n'y a sur ces plaques aucun prurit; la pression avec le doigt y est à peine douloureuse. Cette affection s'observe communément sur les jambes, plus souvent peut-être chez les filles que chez les garçons. Je l'ai souvent rencontrée sur les jambes des jeunes blanchisseuses, chez des jeunes filles offrant tous les attributs de la fraîcheur et de l'embonpoint scrofuleux. Son siège de prédilection est la partie externe et inférieure de la jambe. On la voit quelquefois aussi siéger un peu au-dessus du talon, le long du tendon d'Achille. Enfin on peut la remarquer encore sur la face, et je l'ai vue, sur cette région alterner avec l'ophtalmie scrofuleuse." And in the following year in his *Leçons sur les Affections Génériques de la Peau*, he sums up its characteristics, while differentiating it from erythema nodosum:—"Enfin

<sup>a</sup> Continued from the number of this Journal for January, 1892. Vol. XCIII., No. 241, p. 78.

l'érythème induré des scrofuleux est caractérisé par des larges plaques dont la coloration est la même sur tous les points, l'induration souscutanée sensiblement égale et qui ne donne naissance à aucune douleur quand on les presse entre les doigts, tandis que l'érythème noueux, affection avec laquelle on pourrait la confondre, présente successivement toutes les nuances de l'ecchymose, et est douloureux à la pression, &c. Enfin, l'érythème noueux ne persiste pas au delà de dix-huit à vingt jours, tandis que l'érythème induré se perpetue pendant les mois." (P. 73.)

Recent accounts of the disease with records of cases have been published by Mr. Jonathan Hutchinson<sup>a</sup> and by Dr. Colcott Fox,<sup>b</sup> and it was the study of these papers that first made me acquainted with its clinical features, though judging from nine months' experience it seems to be far from a rare disease, though often overlooked or wrongly diagnosticated.

CASE I.<sup>c</sup>—Mary R., aged eighteen, first came to the out-patient department at St. Vincent's Hospital, in November, 1889. She was an unhealthy-looking girl, with a dark, sallow complexion, and thickened *alæ nasi* and lips. She was suffering from multiple small punched-out ulcers of a peculiarly sluggish and unhealthy type, situated on the anterior aspects of both legs. The surrounding skin was of a dark livid colour, extremely indurated and but slightly movable over the underlying tissues. There were numerous small outlying nodules which were not elevated but could be felt underneath the skin, and were marked by a superficial brownish pigmentation. Some of these had broken down and were discharging through a tiny pin-hole opening a small quantity of sero-pus. These spots and ulcers were absolutely painless, appeared to spread by direct infection of tissue, and showed no tendency whatever towards healing. They were partially symmetrical, and no other part of the body was affected. There was no enlargement of the inguinal or any other glands. No history of syphilis, either hereditary or acquired, could be obtained; but so certain was I from the characters of the ulcers—which resembled broken-down superficial gummata—that some such taint was present, that the patient was put on a course of specific constitutional treatment, while a mild mercurial ointment was used locally. This treatment was pursued for some months, alternating with simple tonic treatment, but without any marked effect on the progress of the disease. During this period she had two or three attacks of inflammation of the anterior nares with induration and thickening, and the formation of crusts, much resembling the early stage of lupus. There was also some irregularity of menstruation about this time. For some months I lost

<sup>a</sup> Archives of Surgery. Vol. V. No. 17. July, 1893, p. 31.

<sup>b</sup> British Journal of Dermatology, August and October, 1893.

<sup>c</sup> This case has already been published in the British Journal of Dermatology, November, 1893.

sight of my patient, and she had almost drifted out of my recollection as a case of anomalous syphilis when, in October, 1890, she was brought to me again by her mother on account of a swelling in her neck. On examining the part I found a chain of enlarged, indurated glands extending from ear to ear, the largest about as big as a walnut, and presenting all the characteristics generally associated with tubercular adenitis. On inquiring about the ulcers on the legs, I found that they had to a great extent healed, leaving dusky brownish-coloured patches which had remained permanently, but that recently, since the enlargement of the neck had been noticed, many of them had broken down again, and that there were once more numerous ulcers on both legs. These, on examination, showed the same features as previously—the congestion and induration being well marked, but the circular, or oval, punched-out character was not so prominent, and the margins were more irregular and undermined. I now shifted my ground and put the case under the group of tubercular lesions of the skin, not a true lupus, but a variety of scrofulodermia. The treatment adopted was locally a stimulating ointment, internally cod-liver oil and the hypophosphites of sodium and calcium combined with tonics. Very marked improvement took place in the course of the next few months. Her general health improved; menstruation became regular; the ulcers on both legs almost completely healed, and those remaining had taken on a healthy action; and the glands in the neck had undergone a most noteworthy diminution in size and were much softer—evidently undergoing a gradual process of resolution. I saw her once two or three months afterwards; the legs were then quite well, only some superficial scarring and brown pigmentation remaining, but there was still considerable enlargement of the cervical glands. Since then the patient has been lost sight of.

CASE II.<sup>a</sup>—Annie Q., aged fourteen, is a plump, rosy-complexioned girl, well grown and developed for her years, and at a first casual glance looks the picture of health. She has, however, a decidedly bad family history, several of her brothers and sisters having been treated for various manifestations of tubercular disease. She was sent from the Loretto Convent to St. Vincent's Hospital on account of pains and lumps in her legs, and gave the following history: About six months ago she first noticed some lumps in her legs, chiefly on the backs, which were quite painless, but slowly increased in size while fresh spots appeared from time to time. Gradually the skin overlying the nodules became discoloured, and latterly she has suffered a good deal of pain after standing for some hours in school, and these were the circumstances that led to her being sent to the hospital for treatment. Examination revealed the presence of numerous nodules in both legs—twelve to fifteen on each. They were

<sup>a</sup> This case was shown at the Dublin Biological Club, February 13, 1894.

situated almost entirely below the level of the calves, and those on the left leg were confined to the posterior aspect of the limb. On the right side, however, they encroached on the internal and anterior aspects though more numerous behind. Those on the left leg were also more fully developed; and just about the middle posteriorly two large nodes had become confluent, and the overlying skin which was tense and of a dark purplish colour seemed just on the point of giving way. There was no local tenderness or pain on handling. Every stage of the process was clearly manifested—from the earliest, where the subcutaneous tubercle could be felt but not seen; through the intermediate, where the nodule now grown larger was covered with the bright red and inflamed skin (much resembling the acute stage of erythema nodosum) and was evident both to sight and touch; to the final, where the larger and more diffused node lay projecting quite superficially, while the tense and dark “violaceous” overlying skin seemed ready to break down and form an ulcer at any moment. None of the related lymphatic glands were affected; but, on the left side of the neck there were two enlarged glands just in front of the sterno-mastoid muscle and below the angle of the jaw. She was put upon tonic treatment, was ordered cod-liver oil, rest, and elastic pressure by means of rubber bandages, and, locally, the application of the ointment recommended by Mr. Hutchinson, containing four grains of bisulphuret of mercury to the ounce. A month later I saw her again. She had not yet got the rubber bandages and had been going about as usual, with the result that the spot on the left leg had broken down into a characteristic shallow, sharply punched-out ulcer, covered with dusky, unhealthy granulations, and emitting only a slight serous discharge. A short time subsequently I saw her again. The legs had been kept bandaged and, though she was still going to school, a large number of the small outlying tubercles had disappeared and others seemed in the process of resolution. The condition of the ulcer was unchanged.

CASE III.—Sarah L., aged eighteen, a servant, was brought to me by her mistress on account of some menstrual irregularity. She was a fine, well-developed girl, but decidedly anæmic, the pallor of the mucous membranes being very evident. She had only been four months in town, having previously lived all her life in the country, and during that time the menstrual flow had been getting less and less until it completely vanished. Quite accidentally she happened to remark that her legs were swollen occasionally of late, and, on examination, expecting to find the usual œdema of the feet and ankles, I was astonished to see that there was no trace of œdema, but that the posterior lower thirds of both legs were covered with from ten to twelve dusky purplish patches which, on palpation, were found to correspond to underlying subcutaneous nodules just as in the previous cases. Many others could be felt, small and deeply



seated but not implicating the overlying skin or giving rise to any projection of the surface. There was no pain or tenderness in any part, and had it not been for the increase in the size of her leg she would have been unconscious of any abnormality in the part. There was in no part any undermining of the skin or apparent tendency towards ulceration. Tonic treatment was clearly indicated and, in addition, mechanical support and friction with soap and iodide liniment was recommended. A fortnight later there was a marked improvement; many of the smaller nodes had disappeared, and the remainder seemed softer than when I first saw her. She is still under observation.

These three cases admirably typify the degrees of severity of the disease, and the characters on which the diagnosis rests. Clearly the affection is not an uncommon one, and it is more than probable that, now attention has been directed to it, numerous cases will be put on record. The chief points of interest in connection with it are, its resemblance to syphilis, and its relation to other manifestations of tubercular disease. It appears to preponderate largely among females: in fact Dr. Colcott Fox states he has never seen a case in a male. But it does undoubtedly occur in both sexes, and I have seen one case in a boy aged eleven, but as I only saw him once and have no notes of his case, I have been unable to include him in the present series.

The main facts of the clinical and natural history of the affection may be briefly summed up in the following propositions:—

1. That *erythema induratum scrofulosorum* is a definite morbid entity, resembling in many of its features the affections of the erythematous group.

2. That it is clinically distinct from the forms of tubercular disease known as scrofuloderma and lupus.

3. That while ulceration may, and does in the majority of cases ultimately occur, it is not the essential or characteristic feature of the disease.\*

4. That it differs from *erythema nodosum* in the absence of febrile or rheumatic manifestations, in the non-occurrence of rapid pigmentary changes, in the slowness of its evolution, and in the site of predilection of the disease.

5. That in the ulcerated state it differs from syphilis, which it then most closely resembles, in its being a local affection mainly confined to the legs, in the absence of pain and of gummatous degeneration, in the

\* Ulceration is the feature selected by Mr. Hutchinson as characteristic, though it is in reality the *least* specific feature of the disease; and, with his predominant passion for personal nomenclature, he describes his cases under the title of "Bazin's Malady: Multiple Ulcers of the Legs," although in many instances ulceration is slight or absent altogether.

absence of general constitutional symptoms, and in its refractoriness to specific treatment.

6. That at some period of its course it is in the large preponderance of cases associated with tubercular enlargements of lymphatic glands.

7. That the essential feature of the disease consists in the slow and painless evolution of subcutaneous tubercles situated most frequently and usually symmetrically on the backs of the legs below the level of the calf, and running a chronic course which ends either in spontaneous resolution or in the undermining and violaceous discoloration of the overlying skin followed by the formation of irregular, shallow, and unhealthy ulcers.

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#### A CASE OF ACROMEGALY.

MOYER details a case of this rare disease—acromegaly—in a man twenty-four years of age, which began at the age of seventeen by rapid growth of the whole body, especially of the hands. At twenty the eyebrows began to enlarge. Subsequently to an attack of influenza he had had pain in the head, the hands, and fingers. The present condition shows enlargement of the frontal sinuses and of the soft tissues covering them; the nose is large, the lower jaw wide, and the lips thick. The circumference of the head is 24·5 inches. The spade-like, symmetrical hands measure 9 inches in length and 4·5 inches across the palm, and are covered with coarse, thick skin. The mental capacity has failed. Examination of eyes showed a high degree of hyperopia of both eyes, squint of right eye, with some optic atrophy, and amblyopia of the left.—*International Medical Magazine*, February, 1894.

#### A CASE OF MULTIPLE OSTEO-ECCHONDROMA.

WHITTAKER, of Cincinnati (*International Medical Magazine*, February, 1894), reports, in detail, an interesting case of multiple osteo-ecchondroma. A farmer, aged forty, received a shock from a stroke of lightning when six years old. Nine months afterward, the middle joint of the right index finger began to enlarge, and gradually all of the joints of both hands, except the thumb and little finger of the left, became involved, so that the fingers now have the appearance of medium-sized nodulated potatoes. The largest nodule is on the index finger of the right hand, with a circumference of eleven inches. The right upper and lower extremities are much shortened, owing to the development of bony masses, which deform the bones. On the right external malleolus is an enlargement about the size of a lemon. The toes of the right foot are involved in the same manner as the hands, the left foot being nearly normal. The article is well illustrated, and a careful review of the literature of this condition follows.

## PART IV.

### MEDICAL MISCELLANY.

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*Reports, Transactions, and Scientific Intelligence.*

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#### ROYAL ACADEMY OF MEDICINE IN IRELAND.

President—GEORGE H. KIDD, M.D., F.R.C.S.I.

General Secretary—W. THOMSON, F.R.C.S.I.

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#### SECTION OF OBSTETRICS.

President—ANDREW J. HORNE, F.R.C.P.I.

Sectional Secretary—F. W. KIDD, M.D.

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*Friday, December 22, 1893.*

The PRESIDENT in the Chair.

#### *Exhibits.*

DR. ALFRED J. SMITH exhibited—1. Tubes and ovaries removed for rapidly growing fibro-myoma accompanied by profuse hæmorrhage. On rotating the tumour to get left ovary, the mesentery was bruised. The patient's pulse before operation was 90. Directly after operation it fell to 36, and remained between 36 and 40 for forty-eight hours. The pulse was slow, deliberate, non-compressible, like the slow pulse of digitalis poisoning. He attributed the slow pulse to an inhibition of heart through the crushing of the mesenteric nerves. She made a good recovery.

2. A hydrosalpinx removed from a patient who, eighteen months before, had a severe attack of puerperal blood-poisoning. Her temperature before operation was 100° F. at night. The tumour was covered with very extensive adhesions. The points of interest are—The attack of puerperal fever, the presence of a cystic tube, with temperature of 100°, and still contents of cyst clear serum. Recovery of patient perfect.

DR. W. J. SMYLY exhibited—1. A ruptured tubal pregnancy. The

patient had borne one child, and had a miscarriage—the former about eighteen months, and the latter about ten months previous. For about two months before the accident she complained of pelvic pain, a bearing down sensation, and a constant though moderate red discharge. The rupture was attended by violent pain and repeated faintings. The abdomen was opened four hours later, and the right Fallopian tube, together with the ovary and a large quantity of blood, removed. The specimen consisted of the right Fallopian tube and corresponding ovary, and showed a small crack on the posterior surface of the tube, which was distended to size of a small sausage, about half an inch from the fibrated extremity.

2. A myoma about as large as a foetal head, which had been embedded for about a quarter of its surface in the fundus of the uterus. The tumour having been enucleated, the cavity left was stitched up from the bottom, and the abdomen closed. The patient made a good recovery.

3. This specimen was a uterus about as large as a foetal head infested with myomata and with cancer of the mucous membrane. The organ was removed by the mixed method. The cervix having been freed per vaginam the entire organ was extracted by abdominal section. The patient recovered.

4. Two tubes removed for pyosalpinx.

*Case of Ventral Hernia following Laparotomy.*

MR. M'ARDLE read a paper on this subject. [It will be found at page 101.]

DR. W. J. SMYLY said it was his misfortune not to have heard the paper in full. In speaking about ventral hernia, they must distinguish between those which were congenital and acquired, and he was not aware that Mr. M'Ardle referred to the congenital. He himself operated on two cases of that kind by the flap-splitting method of Tait. When a congenital umbilical hernia was cut down on, a very thick ring was found at the edge of the aponeurosis, and it was very easy to split it up with scissors. One could then turn one flap down and the other up, so as to get flat surfaces of aponeurosis opposed to each other. He had two operations of the sort, but, as he had not seen the patients since, he could not speak as to the ultimate result. Hernias that occurred after abdominal section were a great trouble, and brought discredit upon the operation of abdominal section. In order to avoid them one had to make the incision in a certain way and in a certain place, and stitch it with certain precautions. All these certainties were nothing more or less than uncertainties, and if different books were consulted they would see that different men laid emphasis on points totally opposed to each other. He thought it was a matter of importance not to make the incision through the linea alba, but to one side of it, so as to lay open the sheath



of one rectus muscle. Good union would be the result, and especially so in cases where the tissues were stretched by large tumours. The incision should also be as high up in the abdomen as the circumstances of the operation would permit, and the incision itself should be clean-cut and not bruised. He had given up gradually the use of the pressure-clips, and he was struck lately by how little the most successful operators had used them. There were a great many different methods of suturing, but he thought the simplest method the best, especially when the results were equal. The simplest method was Dr. Martin's, and there was fully one and a half or two inches between the sutures, and still no one had better results. He thought suppuration had a great deal to do with the occurrence of hernia after abdominal section. When a wound suppurated granulations sprang up, and the cicatrix atrophied and became thinner, and it was only by the direct union of living tissues that stretching could be avoided. Again, the too frequent use of clips would crush the tissues and make them more liable to tension, and if there was any suppuration in the neighbourhood these parts would infallibly suppurate too.

DR. PARSONS inquired as to the advantages gained by suturing the abdominal wound in layers.

DR. A. J. SMITH said that he had adopted Mr. M'Ardle's method. He thought that the layer directly over the elastic layer retracted considerably. He thought more attention should be given to the middle stratum than to the peritoneum or skin. In all the hernias that he had seen it was owing to the non-approximation of this stratum. They should examine carefully each suture and see that it went through the stratum, as sometimes the superficial layer retracted.

DR. F. W. KIDD thought it was admitted that often there was damage done to the tissues by the pressure forceps. It would be of interest to him to know what other means were adopted to check hæmorrhage from bleeding points.

The PRESIDENT referred to the greater likelihood of hernia occurring after suppuration in the suture track. He mentioned the case of a patient from whom he removed the appendages, and who, several months afterwards, during an attack of severe bronchitis, suffered from a considerable protrusion. With reference to the operation for umbilical hernia, he remembered a patient from whom he removed an ovarian cyst, and in concluding the operation he removed the sac of a congenital umbilical hernia also. Owing to the dense, firm adhesions the operation was protracted, and the patient fell into a state of collapse, but rallied in about an hour. Three hours after she vomited some black matter and died, and the autopsy showed that a gastric ulcer had given away, while the cicatrices of several other old ones were present.

MR. M'ARDLE said if he had done nothing more than elicit those valuable remarks of Dr. Smyly he would be well repaid for his trouble.

He said flap-splitting was the only operation where the peritoneum was fixed to the ring—it was the only one where they could have material for their sutures. He was glad to hear that the use of clips was lessened considerably, and he did not believe that a great number of sutures were necessary. With reference to Dr. Parson's question, he said the importance of the third layer of sutures was that it leaves no space in which fluid could accumulate.

*Colectomy for Adhesion of Cæcum.*

DR. A. J. SMITH read a paper on colectomy for adhesion of cæcum to an old ovarian pedicle and tubercular appendix. [It will be found at page 111.]

DR. W. J. SMYLY thought the method Dr. Smith adopted with regard to the appendix a very neat one. In one case where he removed the appendix he simply pushed in the stump and stitched the peritoneum over it. While in Germany lately he had seen an appendix removed, and the operator simply tied it as if it were an ovarian pedicle, and snipped it off.

MR. M'ARDLE said he believed that in the peculiar movement of the appendix they saw the cause of the spasmodic pain that the patient suffered from. It was the contractions of it which caused the pain, and there were many cases of intestinal obstruction where attachment of the vermiform appendix set up either spasmodic or paralytic obstruction.

DR. PARSONS inquired whether Dr. Smith's statement as to tubercular ulcer of the appendix was made from a naked-eye or a microscopic examination? As far as he was aware tubercular ulcer, confined to the vermiform appendix, was comparatively rare.

DR. A. J. SMITH, in reply, said he found the method of amputating the appendix exceedingly quick, while it was a very secure method also. He thought the pain was due to these curious contractions of the appendix. In reply to Dr. Parsons, he said he had not yet had time to make a microscopic examination, but in the opinion of experts it was a typical tubercular ulcer, and there was no evidence of any concretion.

*Stricture of the Transverse Colon.*

DR. DOYLE exhibited a specimen of stricture of transverse portion of colon, and said the specimen was taken from an old lady who had previous attacks of enteritis and gastritis. In June last she suffered from partial intestinal obstruction, and he proposed some operative procedure which would not be carried out. On making a *post-mortem* he found both sides of the stricture distended, showing that it was not completely occluded. At the point of the stricture there was a band going towards the right side. He would account for the symptoms of intestinal obstruction occurring every week, thus—when the contents of the upper portion of the bowel passed into the descending portion, the transverse portion

was weighed down, and so caused greater narrowness of the stricture, with the result that symptoms of intestinal obstruction were set up, and these passed away according as the lower colon was relieved of its contents.

MR. M'ARDLE said he had seen the case in consultation with Dr. Doyle, and at the time he diagnosticated the obstruction as being in the large intestine. He said the tag prevented the passage of the vermicular contractions over that spot; consequently, emptying the bowel was brought about by stimulation of the rectum, which caused contractions of the lower part of the bowel to be set up.

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## SECTION OF PATHOLOGY.

President—PROF. J. ALFRED SCOTT.

Sectional Secretary—J. B. STORY, F.R.C.S.I.

*Friday, January 5, 1894.*

The PRESIDENT in the Chair.

### *Case of Locomotor Ataxy, with Specimen of Charcot's Disease.*

DR. NUGENT read a case of locomotor ataxy, with specimen of Charcot's disease:—

An army pensioner, aged forty-nine, admitted to the Whitworth Hospital, December 28th, 1892, complaining of swelling in right knee and general difficulty of walking. No history of syphilis, excess of any sort, or heredity.

About three years before admission symptoms commenced, gradually increasing. Weakness and difficulty in walking—first in left leg, then in right—accompanied by lancinating pains and slight bladder trouble. Later on periodical fits of “choking,” which were laryngeal in character, and which started, as he described, from the pit of his stomach.

Three months before he came under observation he got a fall off a vehicle striking his right knee against the ground, and at that time felt something give. The knee rapidly swelled, but was almost painless. It increased or diminished in size from time to time, and in about six weeks after the accident commenced to bend backwards.

His symptoms while in hospital were briefly these. His voice was impaired from paresis of the adductor muscles of the larynx, and speech thick from apparent deficient tongue movement. Pupils markedly myotic; Argyll Robertson phenomenon well developed; and slight ptosis of both upper eyelids. Severe pains in the stomach and constipation. Frequent micturition, especially at night—urine containing large quantity of pus and sometimes a little blood—and occasionally incontinence. Ordinary

sensation is diminished and distinctly delayed to a smart prick of needle. Slight paræsthesiæ such as tingling, &c., and occasionally allocheiria. Knee-jerks are lost, and plantar reflexes diminished.

His gait is considerably modified by the condition of his right knee. He can only progress with extreme difficulty with the aid of two sticks, and when he rested the weight of his body on his right leg, the retroflexion of his right knee was so great as to cause apprehension lest the condyles of his femur, which projected strongly backwards, should burst through the skin. The knee in circumference measured 4 or 5 inches more than that of the opposite side, and this increase, due chiefly to fluid effusion, would considerably subside after some days' rest in bed. The veins over the joint were considerably distended, and the ends of tibia and fibula could be felt to be enlarged. The patient ultimately sank from urinary complications, and died in April, 1893. The autopsy revealed the following condition of the knee-joint:—

The muscles in the neighbourhood of the joint are well developed. Capsule greatly thickened, especially on either side of the ligamentum patella. External lateral ligament thickened; internal, normal in appearance. On the joint being opened the synovial membrane is found to be much thickened, both the part covering the non-articular surface of the bone and that lining the capsule. Numerous small bands pass across at the angle of reflexion. Small pedunculated bodies, hard to the touch, project into the joint cavity. Near the patella the membrane is roughened, and has a warty appearance. The lower end of the femur is greatly enlarged, the cartilage covering the articular portion eroded in parts, and eburnated bone shines through.

The margin of the articular surface above projects abruptly, is irregular and lipped, and overhangs the non-articular surface of the femur. On looking at the posterior surface of the joint large synovial fringes overlap the condyles, the cartilage is eroded in parts, and in other places elastic elevations project from it; irregular bony outgrowths are found along the upper part of condyles. The patella is transversely enlarged, slightly diminished in size from above downwards; its cartilage is partially eroded, and a bony lip of the same character as that on the femur projects from its upper border.

The lip of the tibia is enlarged; the cartilage on the upper surface is eroded in a similar manner to that on the femur, and bony outgrowths appear between the tuberosities. The anterior crucial ligament has disappeared, the posterior also to a great extent, and the femur can with ease be luxated backwards to a very considerable degree. The semilunar cartilages appear to be intact.

The spinal cord, examined by Dr. Alfred Scott, presented the usual appearances found in locomotor ataxy. The posterior columns in all parts are degenerated. In the cervical and dorsal regions the postero-



internal columns are in an extreme condition of degeneration, while the postero-external columns are less so. In the lumbar regions both columns are equally degenerated, but not so much as the postero-internal columns higher up.

The cells in the anterior cornua of grey matter stain badly, and many of the cells in those parts throughout the cord are pigmented and granular.

There does not appear to be any degeneration in the cerebellar tract or elsewhere, except as mentioned above.

MR. CHANCE asked could Charcot's disease of the joints exist without there being any nervous symptoms? In a case he operated upon his patient had a large swelling of her right shoulder. There was no pain, no redness, no increased heat to be felt. It was suggested that the case might be a sarcoma or some slow inflammatory condition. Movement was free, except for the mechanical interference presented by the large swelling. On the joint being opened, about half a pint of clear yellow fluid was found; the glenoid cavity was deprived of cartilage, and the head of the humerus was greatly destroyed. The joint was closed, and two years later the woman had perfect movement in it. She had no tabetic symptoms.

DR. NIXON asked what was the condition of the knee joint of the other limb. The displacement in this case was interesting. In two other cases he had seen the displacement was in an outward direction, and both limbs were affected, one more than the other.

DR. O'CARROLL asked might the condition of the joint be due to a neuritis descending from the spinal cord? Might the perforating ulcer of the foot, and the skin atrophy also, be due to the same cause? Do these conditions occur at the neuritis stage?

DR. DOYLE said that in some cases of chronic rheumatic arthritis, which he had seen, there was more eburnation of the bones. A greater number of joints were affected as well.

DR. NUGENT, in reply, stated that as regards Mr. Chance's question he was unable to give a satisfactory answer. Similar cases had been brought before the Clinical Society of London, and no definite opinion had been arrived at. Many observers asserted that chronic rheumatic arthritis and Charcot's disease of the joints were the same. Charcot himself admitted that a tabetic patient might be attacked with chronic rheumatic arthritis, and that if he was you could not distinguish the two.

In reply to Dr. Nixon, he stated that during life the left knee appeared perfectly normal. It was not examined after death. If his patient had lived longer, the articular ends of the bones of the right knee might have gone on to absorption.

*Stricture of the Colon.*

DR. DOYLE exhibited a specimen. The Section then adjourned.

## SECTION OF SURGERY.

President—EDWARD HAMILTON, President of the Royal College of Surgeons in Ireland.

Sectional Secretary—KENDAL FRANKS, F.R.C.S.I.

*Friday, January 12, 1894.*

SIR W. STOKES in the Chair.

*Fibrous Stricture of the Œsophagus treated by Gastrotomy and Dilatation from below.*

MR. KENDAL FRANKS read a paper on "Fibrous Stricture of the Œsophagus treated by Gastrotomy and Dilatation from below."

The patient, a young lady, aged twenty-four, had suffered from dysphagia ever since she had had scarlatina, when seven years of age. Symptoms had during past two years been progressively worse, and she was reduced from 8 stones to  $5\frac{1}{2}$  stones in last 12 months. Bougies introduced showed a practically impermeable stricture 3 inches above cardiac orifice. On July 6th, 1892, abdomen was opened in middle line from xiphoid cartilage downwards. The stomach, very contracted, was opened for about an inch, cleaned out, and the finger introduced. The stricture was found 3 inches above cardia. Otis' dilating urethrotome, without the blade, was passed along the finger through the stricture, and the stricture was dilated first antero-posteriorly and then laterally. A bougie passed through the mouth emerged in the stomach, and by its means strong silk drawn up the œsophagus to the mouth. A plug of gauze tied to this, with another silk ligature at the other end, was drawn backwards and forwards through the stricture, and was finally left in the stricture, the lower ligature being cut off. The stomach was immediately closed, returned to abdomen, and the external wound sutured. The plug was withdrawn in six hours. The patient made an uninterrupted recovery, and was able to go out on the 21st day. Two months later the stricture readily admitted a medium-sized bougie. Dilatation, supplemented by electrolysis, was carried on subsequently at intervals. The patient, 18 months after operation, was in perfect health, and had increased in weight from  $5\frac{1}{2}$  to  $8\frac{1}{2}$  stones.

The author exhibited a table he had prepared of all the cases hitherto published which he could find; they numbered 21. Eight of these had been done by the immediate method, same as the case recorded. In the remainder a gastric fistula had been first established, and subsequently, from one to four months, retrograde dilatation of the œsophagus, either by Hagenbach's or some other method, had been carried out.

The author argued in favour of the immediate method in all cases of impermeable fibrous stricture, except after extensive injuries involving a great length of the tube, when immediate dilatation would be impracticable.

The operation was devised and first performed by Loreta of Bologna, in October, 1883.

SIR W. STOKES said there were many points of surgical interest and importance in this paper. There were three to which he might direct attention. The first of these was as to the relative merits of gastrotomy or gastrostomy in cases where the retrograde dilatation was to be performed. He gathered that Mr. Franks was in favour altogether of gastrotomy, and he was inclined to agree with him, because, where dilatation was to be performed, there were much greater facilities by performing gastrotomy than where they would have to work their way through a comparatively small fistulous opening in the stomach. Then again, in cases where gastric fistula is established there was always great difficulty in getting it to heal. The next point that occurred to him—and he hoped Mr. Franks would not think he was going to throw any doubt upon the accuracy of his diagnosis—was, that it struck him as being very remarkable, if this was a case of fibrous stricture of the œsophagus of nearly over 17 years' standing, that it should be so very amenable to the treatment of dilatation, and in that respect differing so much from what they knew by experience to occur in cases of stricture of other organs, particularly that of the rectum and urethra. Here they had a case of great chronicity, and on the 21st day after operation the patient was perfectly well. It was very exceptional, assuming it was a fibrous stricture, and he would like to hear Mr. Franks in reference to the possibility of its being a spasmodic closure of the œsophagus. This condition was by no means infrequent in persons of a neurotic tendency. And bearing on this subject, he mentioned the case of a man, aged forty-five, who was admitted into the Meath Hospital three months ago, suffering from acute pain in the right hypochondriac region, and which came on in paroxysms. On examination they found a distinct tumour, ovoid in shape, freely movable and smooth on the surface. He exhibited the case in the Biological Club, and very different opinions were expressed concerning the tumour, but all agreed that laparotomy should be done. He performed laparotomy, and made a careful examination of the contents of the abdomen, but no tumour could be found, and in fact everything appeared perfectly normal. The patient got well without any febrile disturbance; there was no recurrence of the tumour, and the paroxysmal pain has vanished. It occurred to him as to whether there was not a neurosis in a large number of these cases, having regard to the extreme amenability to the treatment and the immediate results that occurred after operation. There was one other point he would wish to

allude to, and that was to the operation of œsophagotomy in cases where the stricture occurred close to the cardiac end. And although the operation required a considerable degree of anatomical skill, still the dangers of the operation were not so great as in gastrotomy. By opening the œsophagus low down they would have as much facilities for dilatation as through the stomach. He merely threw out the suggestion, and he would like to have Mr. Franks' opinion on the point.

MR. T. MYLES thought there was nothing more difficult than to arrive at a correct diagnosis regarding obstructions in the œsophagus. The most experienced surgeons had erred in these intra-thoracic obstructions, and even allowing that the diagnosis is made, they had then to learn whether the obstruction was benign or malignant. He also thought the relations of the œsophagus to the diaphragm very important, and in many cases stricture of the œsophagus, close to the cardiac end, was due to some interference with the normal physiological opening in the diaphragm. Many of those cases which were cured by electricity and bougies, were merely strictures comparable to the "stammering" of the bladder in retention of urine. Another point of importance was the height to which the diaphragm ascends. In his own case the stricture was barely within reach of his finger when placed in the stomach, so that digital dilatation is only applicable to cases very low down. He believed Mr. Franks' case to be one of *bonâ fide* stricture successfully treated. He submitted that owing to the proximity of great vessels and nerves to the œsophagus, and to the fact that an instrument must form an acute angle with the œsophagus, the dangers of œsophagotomy were much greater than those of gastrotomy. In his own case he had little doubt that the stricture was malignant, and he believed that his patient died of inanition. He failed to see any analogy in stricture of the urethra, because in the latter case they had a canal composed of unyielding structures, and subject to the passage of irritating matters.

MR. F. A. NIXON thought that the dilator should not be used as long as the finger could reach the stricture. He found from examinations on the dead subject as well as from Mr. Myles case, that when the hand is passed into the stomach with the finger in the œsophagus, the cardiac auricle rested in the palm of the hand, and very slight pressure would cause it to perforate the œsophagus and wound the auricle. He thought the operation of gastrotomy much more simple than opening the œsophagus.

MR. TOBIN said that among the various measures enumerated for the cure of the stricture, no mention had been made of leaving in a tube for a considerable length of time with a view of bringing about gradual enlargement of the stricture. He thought the passing of the threads through the œsophagus, and into the opening in the stomach, a very admirable method; but if a full-sized instrument occupied the place of



the thread its pressure might bring about absorption, just as occurred in urethral stricture. The operation, as suggested by Mr. Franks, seemed to him to possess great advantages, because, even if they failed to get the stricture dilated they would still have means left of getting food into the stomach, which would not exist where œsophagotomy was performed. In the cases of œsophagotomy that he had to deal with he had always great difficulty on the question of drainage. He did not know of any wound more difficult to keep aseptic, because the pus was very difficult to drain, and the sterno-mastoid usually fell over the opening. If only for these reasons he always preferred the operation of gastrotomy.

MR. WHEELER said he could not agree with Mr. Myles as to the difficulty or danger of œsophagotomy. He performed the operation on four different occasions, and he avoided all the vessels which Mr. Myles dreaded so much. He thought the best method of keeping the wound aseptic was to drain with catgut. The question to his mind was, whether they could dilate a stricture 3 inches from the stomach by opening the œsophagus through the neck.

MR. MYLES wished it to be understood that he used the word *difficult* in a relative sense, and of course they would not meet with such large blood vessels in opening into the stomach as they would in œsophagotomy.

MR. M'ARDLE said that in performing the operation of œsophagotomy, he had no difficulty, but he had a good deal in guiding a bougie through the stricture. He opened it high up on account of cellulitis having occurred where the opening in the œsophagus originally occurred. In dilating the œsophagus, he found it easier to work from the mouth—and why perform the operation when they had a natural opening above?

MR. KENDAL FRANKS, in reply, tendered his sincere thanks for the kind manner in which his paper had been received. His paper did not deal with the question of œsophagotomy, but he thought it was quite proper to discuss whether œsophagotomy might not possibly be a better method than gastrotomy. He was quite well aware that Dr. Grazer, of Erlangen, maintains that it is much easier to reach the stricture through an opening in the œsophagus than through the mouth, and that the bougie can be passed with much greater ease. His (Mr. Franks') great objection to œsophagotomy, as compared with gastrotomy in cases of almost impermeable stricture, was the difficulty of finding the small opening from above. They might sometimes as well look for a "needle in a bundle of straw" as find the small opening from above. But when dealing from below, it was comparatively easy to pass the bougie, because they had not a dilated œsophagus to deal with. In reference to Sir William Stokes' case in the Meath Hospital, he considered it was a case similar to those described by Mr. Mayo Robson, of adhesions within the abdomen, the result of some previous inflammatory process. to exploring the abdomen, these adhesions became freed, and the pain

subsequently disappeared entirely. He could not look upon such cases as purely neurotic. In the case of stricture he had reported, there could be no doubt whatever as to the diagnosis. During anæsthesia, in the course of the operation, the stricture was carefully explored with the finger. He considered that spasmodic stricture of the œsophagus was much more uncommon than fibrous stricture. By examination with bougies he did not think it was likely that a spasmodic stricture could very easily be mistaken for an organic obstruction, but he had frequently found in cases of fibrous stricture the diagnosis of spasm or hysteria made, which simply meant that the patient was left untreated for months or years.

*Some Interesting Cases of Gunshot Wounds.*

MR. AUSTIN MELDON read a paper on "Some Interesting Cases of Gunshot Wounds."

A boy was accidentally shot, the bullet entering the abdomen to the right of the sternum at the lower end. Peritonitis and escape of bile followed. The fistula closed, and he was discharged in a month.

A woman was shot in four places. One bullet passed through the muscles of the right arm: the second lodged in the wrist; the third entered between umbilicus and spine, and was removed from the groin; the fourth entered to the right of the sternum, passed through the lung, and was found in the muscle on the left side. She recovered.

In the next case a man accidentally shot himself. The bullet entered on the right side of the thorax above the nipple, and passed into the lung. He recovered.

MR. MYLES mentioned the case of a young policeman who was shot in the right side of the neck under the sterno-mastoid, and the wound healed perfectly. He had torticollis, and as they thought he was malingering they put him under chloroform, and the spasm disappeared, but subsequently reappeared. He also got paralysis of the right arm, and all the time confidently asserted that the bullet was in his neck. His view was the correct one, for the bullet was extracted a considerable number of years after by another surgeon. Another case was that of a man struck in the thigh, and the bullet ran in the line of his femoral artery. He suffered from no pain or trouble, and the wound healed up with the bullet still in the leg. He also mentioned the case of a man who shot himself through the mouth. The bullet lodged in the base of the brain after shattering the sphenoid, and a lot of brain matter came away, death following soon after.

MR. TWEEDY mentioned the case of a young man who shot himself while in the park, and subsequently walked to the hospital. There was a hole below the right nipple and a lump on the side of the spine, indicating where, as they thought, the bullet was. He died of peritonitis, and

it was found that the bullet had gone through both walls of the stomach.

MR. TOBIN said that no one could show a better record than that of Mr. Meldon.

MR. WHEELER mentioned a case of a young man shot below the ensiform cartilage who recovered. He was also called to a case in Kilkenny, where an officer was shot through the temporal region, and the bullet lodged in the brain. He had no symptoms save that he could not speak, and that there were some slight twitchings of the face. He passed a probe and hit the bullet, but refused to operate on account of the absence of symptoms. The patient was now quite well. He next referred to a gamekeeper who shot himself with a revolver on the side of the neck. He got aphasia and paralysis of the right arm and leg. There was no aperture of exit, so he adopted no treatment, and the man got gradually well. His next case was one in which a man shot himself in the gluteal region, and the bullet travelled round towards the great trochanter. He removed it along with the anterior and external portion of the femur. His next case was a penetrating wound of the lung, and whenever the person spoke a hissing noise could be heard at the back of the lung.

MR. F. A. NIXON mentioned the case of a young man brought into hospital suffering from a very slight wound in the foot, with some discoloration. He was walking in a procession, and thought that somebody must have trod on his foot. The wound was dressed, and subsequently an abscess formed. At the bottom of it they found a revolver bullet.

MR. WHEELER also referred to a bullet found in the pericardium of a man who died in Baggot-street Hospital. He received it at the battle of Salamanca.

MR. KENDAL FRANKS mentioned the case of an American who came to him some years ago to have a bullet removed from the frontal sinus. He had apparently attempted to commit suicide by holding a revolver beneath the jaw and firing upwards—that was about two months previously. The track of the bullet was manifest. It had gone through the tongue, through the hard palate, up through the left nostril, and entered the left frontal sinus. The point of the bullet had impinged on the edge of some bone, because it was found split, and the bullet had turned completely round so that its apex was downwards.

The Section then adjourned.

## SECTION OF MEDICINE.

President—WALTER G. SMITH, M.D., President of the Royal College of Physicians of Ireland.

Sectional Secretary—A. N. MONTGOMERY, M.R.C.P.I.

*Friday, January 19, 1894.*

The PRESIDENT in the Chair.

*Cancrum Oris in Typhoid Fever.*

DR. H. T. BEWLEY described the case of a boy, aged fourteen years, who was attacked very severely by typhoid fever. On the 41st day of the disease a black patch was noticed inside the right cheek, and two days after another black patch was observed inside the left cheek. The latter soon healed, but the former was accompanied by much hardness and swelling of the cheek, and increased till it involved the skin. Then the gangrene ceased to spread and the slough rapidly separated. The boy during this process was very weak, but was given large quantities of nourishment and stimulants—12 ozs. of whisky every 24 hours for 10 days—and seemed to derive much benefit therefrom. The slough was very large, and when it came away left an opening through the cheek of the size of a shilling, and a large cavity inside the cheek extending from near the angle of the lips to the ascending ramus of the jaw. The boy, however, made a good recovery, and the opening through the cheek closed completely in about six weeks. No contraction has yet occurred in the tissues. The stench, which had been very bad, Dr. Bewley thought, was most successfully kept down with local application of creolin and of eucalyptus oil.

Dr. Bewley called attention to the rarity of cancrum oris in typhoid fever, to the high mortality which occurs in it, and to the fact that this case did extremely well without any surgical interference.

DR. POLLOCK mentioned a case of typhoid in which he had seen inflammation and sloughing of an entire sub-maxillary gland.

DR. J. W. MOORE said that during 13 years' experience as visiting physician at Cork-street Fever Hospital he had seen only four cases of cancrum oris—two following measles and two following typhus. Murchison, in an experience of 5,800 cases of typhoid fever, had seen it occur in it only once. Dr. Moore recommended that the mouth should be rendered as aseptic as possible and kept so. The teeth might be cleansed with a paste composed of eucalyptus oil, liquefied carbolic acid and precipitated chalk, and the mouth might then be rinsed out with an antiseptic fluid.

MR. DOYLE said he had treated two cases of cancrum oris last year.



He did not know whether they were recovering from fever, but he found them on admission to hospital with very decayed teeth. These he extracted and applied to the gangrenous surface in one of the cases hydrochloric acid and in the other nitric acid. The subsequent treatment consisted in cleansing the mouth with a large throat brush and spraying the cavity of the mouth. He also sprayed the interior of the nose and the back of the throat. As medicine he gave small doses of tr. opii and found them very beneficial.

DR. FINNY said he had only seen the teeth and gums affected by extension from the cheek. He pointed out that the disease always began in the cheek opposite the first molar tooth.

DR. BOYD narrated an account of the treatment pursued in one of the children's hospitals in New York, where an epidemic of cancrum oris broke out. There were 40 cases, and the mortality was only 4 or 5. Subnitrate of bismuth was applied locally. He remarked that the disease had become much less frequent since mercury had been less freely used. He thought that the extensive ulceration in the bowel in typhoid fever allowed of the absorption of the poisonous products of bacteria present in the contents of the intestines. This might have something to do with the extensive suppuration which occurred in Dr. Bewley's case.

DR. LITTLE drew attention to the benefit resulting from the administration of stimulants in this case. He considered that the whole question of stimulants required revision. In some cases patients get well in which they are freely given, but they would have done better without them, while in others they would have died if they had not got them. He had seen alcohol do good in cases of pyæmia and septicæmia.

DR. DAWSON mentioned a case of a boy of six years recovering from measles, who was well nourished, but was attacked with cancrum oris first in the left cheek and then in the right. The greater part of his left cheek was destroyed, and a portion of the alveolar process of the jaw exposed. His right cheek was perforated with a hole of about the size of a sixpence. The child recovered; the hole in his right cheek was obliterated; and the opening in the left cheek was much diminished without any operative interference. To allay the foul odour dilute sulphurous acid was sprayed into the mouth.

DR. DAVIS suggested that the opening of the parotid duct being situated near the position at which the ulcerations usually occurred, it was possible that it might afford a nidus for micro-organisms.

The PRESIDENT said that the local complications occurring in the mouth in acute fever were of three sorts:—1. Severe ulceration. 2. Acute periostitis. 3. The gangrenous inflammation styled "cancrum oris." Dr. Bewley's case was interesting in that it attacked an older patient than is usual, and that the disease occurred after typhoid fever. In favour of there being a specific cause for the disease we have—

(1) its rarity, (2) the definite symptoms and signs, and (3) the constancy of the appearances presented. The foul smell is not a constant factor. In a case lately treated in Sir P. Dun's Hospital there was absolutely no odour. It is a matter of note the quantity of stimulants taken by this boy in a short time. Alcohol, as it is oxidised into carbonic acid and water, is capable of being a source of energy to the body and thus a good—using this word in its widest sense. When more than a certain quantity is taken, part of it circulates unchanged in the body and is excreted as such. To this portion present in the tissues as alcohol might be referred—(1) its antipyretic properties, (2) its antiseptic properties, and (3) its action on the leucocytes.

Dr. BEWLEY, in reply, stated that this boy had a very considerable quantity of opium throughout his whole illness. His teeth were not at all affected. He could give no reason why the disease began opposite the first molar tooth. He thought the opening of the parotid duct had nothing to do with it, because in his case the duct was not opened, and no salivary fistula resulted. As regards the stench, it came from the dead slough, and when it was removed the stench ceased.

*Case of Associated Paralysis of the Right Portio Dura and Pneumogastric Nerves.*

Dr. J. W. MOORE read the notes of this case. [They will be found at page 315.]

Dr. PARSONS wished to ask what was the condition of the patient's tasting powers. Could the paralysis of the 7th be a mere coincidence. It was very odd that the 6th nerve was not affected if the patient suffered from basal meningitis, considering the frequency with which it is affected. As regards the path by which sensory impulses of taste reached the brain, physiologists and clinical physicians were not yet agreed.

Dr. R. A. HAYES considered that it was pretty evident that there was an empyema of the sphenoidal air sinus. The pus, however, found free exit and did not produce pressure symptoms. An extension of inflammation by continuity of tissue, remembering the great thinness of part of the wall of the sinus, might account in the main for the symptoms.

Dr. DAVIS thought that the nerve affected might have been the accessory portion of the spinal accessory.

Dr. FINNY thought that the simplest explanation was an abscess in the upper posterior part of the pharynx, and that it engaged the 7th nerve close to its exit from the stylo-mastoid foramen.

Dr. J. W. MOORE, in reply, stated that both the motor and taste functions of the patient's tongue were perfect. There was no ear lesion and no hyperacuteness of hearing. As regards Dr. Finny's view, it does not seem to fully account for the first four days of the illness when the patient suffered from giddiness, vomiting, and severe pain in her head.

# SANITARY AND METEOROLOGICAL NOTES.

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## VITAL STATISTICS

*For four Weeks ending Saturday, March 24, 1894.*

The deaths registered in each of the four weeks in the sixteen principal Town Districts of Ireland, alphabetically arranged, corresponded to the following annual rates per 1,000 :—

| Towns     | Weeks ending |            |            |            | Towns       | Weeks ending |            |            |            |
|-----------|--------------|------------|------------|------------|-------------|--------------|------------|------------|------------|
|           | Mar.<br>3    | Mar.<br>10 | Mar.<br>17 | Mar.<br>24 |             | Mar.<br>3    | Mar.<br>10 | Mar.<br>17 | Mar.<br>24 |
| Armagh -  | 35.1         | 28.0       | 28.0       | 14.0       | Limerick -  | 23.9         | 32.3       | 26.7       | 9.8        |
| Belfast - | 28.7         | 31.2       | 29.6       | 26.9       | Lisburn -   | 12.8         | 17.0       | 12.8       | 29.8       |
| Cork -    | 28.4         | 30.5       | 23.5       | 27.0       | Londonderry | 15.7         | 12.6       | 9.4        | 23.6       |
| Drogheda  | 30.7         | 13.2       | 17.6       | 22.0       | Lurgan -    | 18.2         | 13.7       | 36.5       | 4.6        |
| Dublin -  | 29.2         | 28.9       | 24.5       | 28.8       | Newry -     | 8.1          | 28.2       | 28.2       | 16.1       |
| Dundalk - | 8.4          | 12.6       | 16.8       | 50.3       | Sligo -     | 5.1          | 5.1        | 40.6       | 20.3       |
| Galway -  | 49.1         | 34.0       | 26.4       | 15.1       | Waterford - | 25.0         | 10.0       | 12.5       | 32.5       |
| Kilkenny  | 28.3         | 14.2       | 23.6       | 4.7        | Wexford -   | 36.1         | 31.6       | 22.6       | 13.5       |

In the week ending Saturday, March 3, 1894, the mortality in thirty-three large English towns, including London (in which the rate was 21.0), was equal to an average annual death-rate of 20.5 per 1,000 persons living. The average rate for eight principal towns of Scotland was 19.6 per 1,000. In Glasgow the rate was 19.1, and in Edinburgh it was 17.3.

The average annual death-rate represented by the deaths registered during the week in the sixteen principal town districts of Ireland was 27.4 per 1,000 of the population.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 3.1 per 1,000, the rates varying from 0.0 in eleven of the districts to 6.8 in Belfast—the 148 deaths from all causes registered in that district comprising 12 from measles (being an increase

of 5 as compared with the number for the preceding week), 12 from whooping-cough (against 6 for the preceding week), 2 from diphtheria, 4 from enteric fever, and 5 from diarrhœa. Among the 41 deaths in Cork are 1 from enteric fever and 1 from diarrhœa. The 17 deaths in Limerick comprise one from typhus.

In the Dublin Registration District the registered births amounted to 231—110 boys and 121 girls; and the registered deaths to 202—83 males and 119 females.

The deaths, which are 3 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 30·1 in every 1,000 of the population. Omitting the deaths (numbering 6) of persons admitted into public institutions from localities outside the district, the rate was 29·2 per 1,000. During the first nine weeks of the current year the death-rate averaged 32·5, and was 0·1 under the mean rate in the corresponding period of the ten years 1884—1893.

The number of deaths from zymotic diseases registered was 25, being equal to the number for the preceding week, and 3 in excess of the average for the ninth week of the last ten years. The 25 deaths comprise 2 from measles, 1 from typhus, 6 from influenza and its complications, 7 from whooping-cough, 3 from enteric fever, 1 from diarrhœa, and 1 from erysipelas.

Nine cases of enteric fever were admitted to hospital, being 2 over the admissions for the preceding week, but 1 under the number for the week ended February 17. Ten enteric fever patients were discharged, 2 died, and 50 remained under treatment on Saturday, being 3 under the number in hospital on Saturday, February 24.

The number of cases of scarlatina admitted to hospital was 15, being a decline of 3 as compared with the admissions for the preceding week. Eight patients were discharged, and 73 remained under treatment on Saturday, being 7 over the number in hospital at the close of the preceding week.

The hospital admissions for the week included, also, 16 cases of measles (against 7 for the preceding week), but no cases of typhus were admitted: 30 cases of measles and 3 of typhus remained under treatment in hospital on Saturday.

Deaths from diseases of the respiratory system, which had risen from 58 for the week ending February 17, to 62 for the following week, fell to 41, or 6 below the average for the corresponding week of the last ten years. The 41 deaths comprise 25 from bronchitis and 12 from pneumonia or inflammation of the lungs.

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In the week ending Saturday, March 10, the mortality in thirty-three large English towns, including London (in which the rate was 20·4), was equal to an average annual death-rate of 19·9 per 1,000 persons



living. The average rate for eight principal towns of Scotland was 21·1 per 1,000. In Glasgow the rate was 22·4, and in Edinburgh it was 18·3.

The average annual death-rate in the sixteen principal town districts of Ireland was 27·7 per 1,000 of the population.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 2·7 per 1,000, the rates varying from 0·0 in ten of the districts to 5·2 in Belfast—the 161 deaths from all causes registered in that district comprising 12 from measles (being equal to the number for the preceding week), 8 from whooping-cough (being 4 under the number for the preceding week), 1 from enteric fever, and 6 from diarrhœa. Among the 44 deaths in Cork are 1 from typhus, 2 from enteric fever, and 1 from diarrhœa. The 23 deaths in Limerick comprise 1 from typhus and 1 from diarrhœa.

In the Dublin Registration District the registered births amounted to 178—99 boys and 79 girls; and the registered deaths to 204—100 males and 104 females.

The deaths, which are 11 under the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 30·4 in every 1,000 of the population. Omitting the deaths (numbering 10) of persons admitted into public institutions from localities outside the district, the rate was 28·9 per 1,000. During the first ten weeks of the current year the death-rate averaged 32·3, and was 0·3 under the mean rate in the corresponding period of the ten years 1884–1893.

The number of deaths from zymotic diseases registered was 22, being equal to the average for the corresponding week of the last ten years, but 3 under the number for the week ended March 3. The 22 deaths comprise 1 from measles, 1 from scarlet fever (scarlatina), 5 from influenza and its complications, 6 from whooping-cough, 3 from enteric fever, and 2 from diarrhœa.

Only 2 cases of enteric fever were admitted to hospital, being 7 under the admissions for the preceding week, and 5 under the number for the week ended February 24. Eleven enteric fever patients were discharged, 1 died, and 40 remained under treatment on Saturday, being 10 under the number in hospital on Saturday, March 3.

Seventeen cases of scarlatina were admitted to hospital, being an increase of 2 as compared with the admissions for the preceding week. Twelve patients were discharged, 2 died, and 76 remained under treatment on Saturday, being 3 over the number in hospital at the close of the preceding week.

The hospital admissions for the week included, also, 11 cases of measles (being a decrease of 5 as compared with the admissions for the preceding week), and 2 of typhus: 35 cases of measles and 4 of typhus remained under treatment in hospital on Saturday.

The number of deaths from diseases of the respiratory system registered

is 45, being 4 over the number for the preceding week, but 7 below the average for the tenth week of the last ten years. The 45 deaths comprise 30 from bronchitis and 9 from pneumonia or inflammation of the lungs.

In the week ending Saturday, March 17, the mortality in thirty-three large English towns, including London (in which the rate was 19·3), was equal to an average annual death-rate of 19·2 per 1,000 persons living. The average rate for eight principal towns of Scotland was 21·0 per 1,000. In Glasgow the rate was 22·9, and in Edinburgh it was 19·8.

The average annual death-rate represented by the deaths registered in the sixteen principal town districts of Ireland was 25·2 per 1,000 of the population.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 2·4 per 1,000, the rates varying from 0·0 in seven of the districts to 5·1 in Sligo—the 8 deaths from all causes registered in that district comprising 1 from typhus. Among the 153 deaths from all causes registered in Belfast are 11 from measles (being 1 under the number for the preceding week), 7 from whooping-cough (also one under the number for the preceding week), 3 from diphtheria, 3 from enteric fever, and 1 from diarrhœa. The 34 deaths in Cork comprise 1 from each of the following diseases, viz.—Measles, enteric fever, and diarrhœa. The Registrar of Belfast No 9 District remarks :—“There have been some cases of typhoid, several of which were of a very severe character.”

In the Dublin Registration District the registered births amounted to 187—88 boys and 99 girls; and the registered deaths to 173—81 males and 92 females.

The deaths, which are 35 under the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 25·8 in every 1,000 of the population. Omitting the deaths (numbering 9) of persons admitted into public institutions from localities outside the district, the rate was 24·5 per 1,000. During the first eleven weeks of the current year the death-rate averaged 31·7, and was 0·7 under the mean rate in the corresponding period of the ten years 1884-1893.

The number of deaths from zymotic diseases registered, was 20, being 2 under the number for the preceding week and 1 under the average for the eleventh week of the last ten years. The 20 deaths comprise 1 from measles, 8 from influenza and its complications, 5 from whooping-cough, 2 from enteric fever, and 1 from dysentery.

Six cases of enteric fever were admitted to hospital, being 4 over the admissions for the preceding week, but 3 under the number for the week ended March 3. Seven enteric fever patients were discharged, and 39 remained under treatment on Saturday, being 1 under the number in hospital at the close of the preceding week.

The number of cases of scarlatina admitted to hospital during the week was 10, being a decrease of 7 as compared with the admissions for the preceding week. Fourteen patients were discharged, and 72 remained under treatment on Saturday, being 4 under the number in hospital on Saturday, March 10.

Only 2 cases of measles were admitted to hospital, being a decrease of 9 as compared with the admissions for the preceding week and 14 under the number for the week ended March 3. Eleven patients were discharged, and 26 cases of the disease remained under treatment in hospital on Saturday.

The hospital admissions for the week included, also, 1 case of typhus: 4 cases of this disease remained under treatment in hospital on Saturday.

The number of deaths from diseases of the respiratory system registered was 44, being 1 under the number for the preceding week and 4 below the average for the eleventh week of the last ten years. The 44 deaths comprise 29 from bronchitis and 14 from pneumonia or inflammation of the lungs.

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In the week ending Saturday, March 24, the mortality in thirty-three large English towns, including London (in which the rate was 20·3), was equal to an average annual death-rate of 19·8 per 1,000 persons living. The average rate for eight principal towns of Scotland was 18·7 per 1,000. In Glasgow the rate was 20·1, and in Edinburgh it was 17·3.

The average annual death-rate in the sixteen principal town districts of Ireland was 26·0 per 1,000 of the population.

The deaths from the principal zymotic diseases registered in the sixteen districts were equal to an annual rate of 3·4 per 1,000, the rates varying from 0·0 in ten of the districts to 7·2 in Belfast—the 139 deaths from all causes registered in that district comprising 22 from measles (being 11 over the number for the preceding week), 2 from typhus, 7 from whooping-cough, 5 from enteric fever, and 1 from diarrhoea. Among the 15 deaths from all causes registered in Londonderry are 2 from diphtheria; and the 13 deaths in Waterford comprise 2 from scarlatina. The Assistant-Registrar of Cork No. 5 District reports the prevalence of measles.

In the Dublin Registration District the registered births amounted to 161—81 boys and 80 girls; and the registered deaths to 197—88 males and 109 females.

The deaths, which are 17 under the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 29·4 in every 1,000 of the population. Omitting the deaths (numbering 4) of persons admitted into public institutions from localities outside the district, the rate was 28·8 per 1,000. During the first twelve weeks of

the current year the death-rate averaged 31·5, and was 0·9 under the mean rate for the corresponding period of the ten years 1884–1893.

Twenty-eight deaths from zymotic diseases were registered, being 8 over the number for the preceding week, and 6 in excess of the average for the twelfth week of the last ten years. The 28 deaths comprise 3 from measles, 5 from scarlet fever (scarlatina), 4 from influenza and its complications, 3 from whooping-cough, 1 from diphtheria, 1 from enteric fever, 2 from diarrhœa, and 1 from dysentery.

Ten cases of enteric fever were admitted to hospital, being 4 over the admissions for the preceding week. Six enteric fever patients were discharged, and 43 remained under treatment on Saturday, being 4 over the number in hospital at the close of the preceding week.

Twelve cases of scarlatina were admitted to hospital, being an increase of 2 as compared with the admissions for the preceding week, but 5 under the number for the week ended March 10. Seven patients were discharged, 2 died, and 75 remained under treatment on Saturday, being 3 over the number in hospital at the close of the preceding week.

The hospital admissions for the week included, also, 1 cases of measles and 1 of typhus: 19 cases of the former and 5 of the latter disease remained under treatment in hospital on Saturday.

The number of deaths from diseases of the respiratory system registered was 57, being 13 over the number for the week ended March 17, and 8 over the average for the twelfth week of the last ten years. The 57 deaths comprise 42 from bronchitis, 10 from pneumonia or inflammation of the lungs, and 2 from croup.

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#### METEOROLOGY.

*Abstract of Observations made in the City of Dublin, Lat. 53° 20' N., Long. 6° 15' W., for the Month of March, 1894.*

|                                                   |   |   |   |                |
|---------------------------------------------------|---|---|---|----------------|
| Mean Height of Barometer,                         | - | - | - | 29·896 inches. |
| Maximal Height of Barometer (on 23rd, at 9 a.m.), | - | - | - | 30·434 „       |
| Minimal Height of Barometer (on 13th, at 7 a.m.), | - | - | - | 29·096 „       |
| Mean Dry-bulb Temperature,                        | - | - | - | 43·8°.         |
| Mean Wet-bulb Temperature,                        | - | - | - | 41·5°          |
| Mean Dew-point Temperature,                       | - | - | - | 38·8°.         |
| Mean Elastic Force (Tension) of Aqueous Vapour,   | - | - | - | ·236 inch.     |
| Mean Humidity, - - - - -                          | - | - | - | 83·2 per cent. |
| Highest Temperature in Shade (on 29th),           | - | - | - | 63·6°.         |
| Lowest Temperature in Shade (on 17th),            | - | - | - | 31·8°.         |
| Lowest Temperature on Grass (Radiation) (on 17th) | - | - | - | 28·1°.         |
| Mean Amount of Cloud, - - - - -                   | - | - | - | 32·3 per cent. |
| Rainfall (on 14 days), - - - - -                  | - | - | - | 1·287 inches.  |
| Greatest Daily Rainfall (on 12th),                | - | - | - | ·268 inch.     |
| General Directions of Wind,                       | - | - | - | W., S.W., E.   |



*Remarks.*

March, 1894, was a month of surprises. Until the 15th the weather was unsettled, stormy and showery; after that date absolute drought occurred, lasting until the close of the month. During this period the sky was for the most part unusually free from cloud, hot sunshine prevailed by day, while the nights were clear and sharp, and, indeed, often frosty. The mean amount of cloud throughout amounted to only 32 per cent.

In Dublin the arithmetical mean temperature ( $45.4^{\circ}$ ) was considerably above the average ( $43.1^{\circ}$ ); the mean dry bulb readings at 9 a.m. and 9 p.m. were  $43.8^{\circ}$ . In the twenty-nine years ending with 1893, March was coldest in 1867 and 1883 (M. T. =  $39.0^{\circ}$ ), and warmest in 1893 (M. T. =  $48.1^{\circ}$ ) and in 1868 (M. T. =  $47.3^{\circ}$ ). In 1876 the M. T. was  $41.1^{\circ}$ , in 1879 (the "cold year") it was  $42.5^{\circ}$ . In 1888 it was as low as  $39.8^{\circ}$ ; in 1889 it was  $44.0^{\circ}$ , and in 1890 it was as high as  $45.1^{\circ}$ . In 1891 it was only  $41.7^{\circ}$ ; and in 1892 it was as low as  $39.1^{\circ}$ . As a general rule, February in Dublin is only a shade colder than March. This is due to the fact that the Continental anticyclone usually embraces the British Isles and Scandinavia in March, causing easterly winds. In 1892 February was actually  $2.2^{\circ}$  warmer than March, and in the present year March was only  $0.5^{\circ}$  warmer than February.

The mean height of the barometer was 29.896 inches, or 0.020 inch below the corrected average value for March—namely, 29.916 inches. The mercury rose to 30.434 inches at 9 a.m. of the 23rd, having fallen to 29.096 inches at 7 a.m. of the 13th. The observed range of atmospheric pressure was, therefore, 1.338 inches—that is, more than an inch and three-tenths.

The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was  $43.8^{\circ}$ , or only  $0.1^{\circ}$  above the value for February, 1894. Using the formula, *Mean Temp.* = *Min.* + (*max.* — *min.*  $\times .485$ ), the M. T. becomes  $45.1^{\circ}$ . The arithmetical mean of the maximal and minimal readings was  $45.4^{\circ}$ , compared with a twenty-five years' average of  $43.1^{\circ}$ . On the 29th the thermometer in the screen rose to  $63.6^{\circ}$ —wind, E.; on the 17th the temperature fell to  $31.8^{\circ}$ —wind, E.S.E. The minimum on the grass was  $28.1^{\circ}$ , also on the 17th.

The rainfall was 1.287 inches, distributed over 14 days. The average rainfall for March in the twenty-five years, 1865–89, inclusive, was 2.061 inches, and the average number of rainy days was 16.5. The rainfall, therefore, was much below the average, while the rainy days were also to a less extent below it. In 1867 the rainfall in March was very large—4.972 inches on 22 days; in 1888, 3.753 inches fell on 18 days; in 1866 also 3.629 inches fell on 21 days. On the other hand, in 1871, only .815 of an inch was measured on 12 days, and in 1874, only .953 of an inch fell on 12 days. In 1887 (the "dry year"), 1.485 inches of rain

fell on 15 days; in 1889, 1·076 inches fell on, however, as many as 17 days; in 1890 the fall was as much as 3·693 inches on 17 days; but in 1891 only ·936 of an inch fell on 16 days, and in 1892 only ·991 of an inch on but 9 days. The smallest March rainfall was ·288 inch on 8 days in 1893.

The atmosphere was more or less foggy in the city on 10 days—viz., the 16th, 17th, 19th, 20th, 21st, 22nd, 23rd, 24th, 29th, and 31st. High winds were noted on 12 days, reaching the force of a gale on four occasions—the 1st, 5th, 10th, and 11th. Snow or sleet occurred on the 11th, 12th, and 15th; and hail fell on the 1st, 2nd, 11th, 13th, and 15th. The temperature exceeded 50° in the screen on as many as 22 days, compared with 26 days in 1893, only 7 days in 1892, 9 days in 1891, and 19 days in 1890, while it twice fell to 32° in the screen. In March, 1892, frost had occurred in the shade on as many as 16 nights; but no shade frost occurred in March, 1893. The minima on the grass were 32°, or less, on 12 nights, compared with the same number of nights in 1893, 25 nights in 1892, 20 nights in 1891, and 16 nights in 1890. On 2 days the thermometer rose above 60° in the screen, while (as in 1893) it never failed to reach 40°. In March, 1892, the thermometer did not rise to 40° in the screen on 9 days. Solar halos were seen on the 12th and 16th. Brilliant aurora borealis occurred on the night of the 30th.

The first three days of the month were changeable, with frequent showers and strong, chiefly westerly, winds. A fresh gale sprang up in the course of Wednesday night, February 28, and was followed by a downpour of rain and afterwards by sharp hail-showers on Thursday afternoon, the 1st. By 8 a.m. of Friday the barometer had fallen to 28·57 inches at Sumburgh Head in the Shetlands. A rapid increase of atmospheric pressure ensued on this day, and a brief spell of fair, spring-like weather was enjoyed. On Saturday the wind backed to S.W. and freshened with renewed showers.

The weather remained of the “westerly type” throughout the week ended Saturday, the 10th. Strong or squally S.W. to W.N.W. winds, most unstable temperature, frequent rains or passing showers, and fine, bright intervals make up the record of the period. On Sunday a depression lay off the north of Scotland, while another was found over the eastern part of that country. N.W. winds and cool, showery weather prevailed in Ireland. On Monday a new and much more extensive depression came in from the Atlantic. Its centre lay between the Shetlands and Norway at 8 a.m. of Tuesday, when pressure ranged from 30·34 inches at Biarritz to 28·90 at Sumburgh Head (Shetland Mainland). The cyclonic circulation of winds round this low pressure system was well marked—N. in the Shetlands, N.W. in Scotland and Ireland, W. in England, S.W. in Belgium and Holland, S. in Denmark, and S.E. in

Norway. Hardly had this system moved away in a south-easterly direction, when another depression appeared off the west of Scotland, bringing with it more rain or showers. After Wednesday a tendency to anticyclonic conditions existed over the Baltic, so that the wind became south-easterly in Sweden and Norway. In the British Islands, however, S.W. and W. winds persisted. In Dublin the mean height of the barometer was 29·678 inches, pressure ranging between 30·317 inches at 9 p.m. of Sunday (wind, N.W.), and 29·296 inches about 3 p.m. of Friday (wind, W.S.W.). The corrected mean temperature was 44·8°. The mean dry bulb readings at 9 a.m. and 9 p.m. were 44·5°. On Friday the thermometers in the screen rose to 54·7°, having fallen to 35·9° on Wednesday. Rain fell on every day of the week to the total amount of ·616 inch, ·200 inch being measured on Monday, and ·192 inch on Thursday. The prevailing winds were W.N.W. and W.S.W.

Opening amid storm and rain, the week ended Saturday, the 17th, witnessed a change to quieter, finer, though colder weather, and closed with a spring-like day. At 8 a.m. of Sunday the barometer read 30·10 inches at Lyons, but the centre of a very large and deep depression lay between the Orkneys and Shetlands—near the centre the barometer read only 28·10 inches or less; at Sumburgh Head the reading was 28·19 inches, at Wick it was 28·17 inches. The difference of 2 inches in atmospheric pressure between central France and the North of Scotland caused strong westerly (S.W. to N.W.) gales on the British coasts, and the weather was very rough and unsettled. Temperature was particularly unsteady—in Dublin the thermometer had risen to 52·7° during the night, but fell to 35·9° in the course of the day, when heavy showers of hail, sleet, and snow passed over. At Cambridge, the maximum on Sunday was 56°. On Monday night a deep secondary system travelled north-eastwards across England, causing heavy rains or falls of wet snow in many places, and gales of considerable violence on the English and Welsh coasts. Again on Wednesday night did a depression cross England, but on this occasion in a south-easterly direction. Hail and sleet showers were very prevalent until Friday, when the weather became dry, fine, and quiet, with fog and frost at night and bright sunshine by day. On Saturday, after a frosty night, temperature rose fast. In Dublin the mean atmospheric pressure was 29·605 inches, the barometer ranging between 29·096 inches at 7 a.m. of Tuesday (wind, W.), and 30·226 inches at 9 p.m. of Saturday (wind, S.W.). The corrected mean temperature was 41·5°. The mean dry bulb readings at 9 a.m. and 9 p.m. were 39·6°. The extremes of temperature were both recorded on Saturday—they were, highest, 52·8°; lowest, 31·8°. Rain fell on five days to the amount of ·555 inch, ·268 inch being registered on Monday. The prevailing winds were W. and W.N.W.

Conditions were anticyclonic throughout the week ended Saturday,

the 24th, and fine, quiet weather prevailed in the British Islands and Central Europe. In the far North and also in the Mediterranean basin the weather was less settled, but nowhere was it very unfavourable. At first the wind was westerly, but this soon gave place to calms and finally to freshening easterly winds, particularly in the south. Owing to radiation at night and to unclouded sunshine by day the diurnal range of temperature was large. Some very high readings were recorded at Aberdeen, viz.,  $63^{\circ}$  on Sunday and  $62^{\circ}$  on Wednesday. On the other hand, the screened thermometer fell to  $28^{\circ}$  on Sunday night at Loughborough and in London. In Dublin, the sky was cloudy from Sunday afternoon to Tuesday afternoon, but with this exception the amount of cloud was small. Heavy dew, haze, and fog prevailed at night and in the mornings, but brilliant sunshine held during the daytime. The mean height of the barometer was 30.324 inches, atmospheric pressure ranging between 30.434 inches at 9 a.m. of Friday (wind, S.S.E.), and 30.246 inches at 9 a.m. of Wednesday (wind calm). It will be observed that the extreme range of atmospheric pressure at this station did not amount to two-tenths of an inch. The corrected mean temperature was  $46.2^{\circ}$ . The mean value of the dry bulb readings at 9 a.m. and 9 p.m. was  $45.1^{\circ}$ . On Wednesday the shade temperature reached  $57.7^{\circ}$ ; on Friday it fell to  $31.9^{\circ}$ . There was no measurable rainfall, although a very light drizzle was observed for a few moments about 12 30 p.m. of Monday. The prevalent winds were S.E. and E.N.E.

During nearly the whole of the week ended the 31st, anticyclonic conditions were again prevalent over western Europe, the central portion of the high pressure system being located for the most part over Denmark, North Germany, and the South of Scandinavia. The prevailing winds were therefore easterly over France and the southern parts of the United Kingdom, but variable or southerly in the north of our Islands, and south-westerly or westerly in Scandinavia. The weather was generally fair and dry, but a good deal of haze or fog was reported over our Islands during the night and early morning hours, and at some of the eastern stations the weather at times remained thick all day. Owing to the prevalence of fog, temperature varied considerably in different places, but in the day time the thermometer was usually high, the maxima occasionally exceeding  $65^{\circ}$  in the more central and southern parts of the Kingdom. At night the weather was cold, especially in the inland districts, where frosts occurred rather frequently not only on the surface of the ground, but also in the screen. The daily range was, therefore, very large, the mean value for the entire week being as high as  $35.6^{\circ}$  both at Loughborough and Cambridge. Towards the close of the period the anticyclone receded slowly to the eastwards, and a shallow low pressure system spread over our Islands from the Atlantic. With the exception, however, of a few local showers the weather remained fine in nearly all



districts. On the night of the 30th brilliant aurora was seen over the greater part of the United Kingdom. In Dublin the mean height of the barometer was 30·002 inches, atmospheric pressure ranging between 30·200 inches at 9 p.m. of Wednesday (wind, E.S.E.), and 29·660 inches at 9 p.m. of Friday (wind, E.). The corrected mean temperature was 48·6°. The mean dry bulb reading at 9 a.m. and 9 p.m. was 46·9°. The highest shade temperature was 63·6° on Thursday. The lowest shade temperature was 37·0° on Sunday. The only rainfall was in the form of very slight showers on Saturday. The general direction of wind was easterly. This week was remarkable for unusually fine and cloudless weather. On Friday night there was a brilliant play of auroral light in the northern sky.

The rainfall in Dublin during the three months ending March 31st amounted to 6·028 inches on 53 days, compared with 5·196 inches on 49 days in 1893, 4·808 inches on 48 days in 1892, only 1·650 inches on but 32 days in 1891, 7·470 inches on 45 days in 1890, 5·738 inches on 53 days in 1889, 6·097 inches on 41 days in 1888, and a twenty-five years average of 6·411 inches on 51·0 days (1865–1889, inclusive).

At Knockdolian, Greystones, Co. Wicklow, 1·505 inches of rain fell on 14 days during March; and the total rainfall since January 1, 1894, equals 8·285 inches on 53 days. The corresponding figures for 1893 are ·205 inch on 6 days, the total rainfall since January 1 having been 7·475 inches on 49 days.

The rainfall in March at Cloneevin, Killiney, Co. Dublin, was 1·11 inches on 14 days, as against ·26 inch on 9 days in 1893, ·98 inches on 10 days in 1892, and a nine years' average of 1·72 inches on 14·0 days. The maximum in the 9 years was 3·59 inches in 1888, the minimum was ·26 inch in 1893. At this station the total rainfall since January, was 5·56 inches on 55 days, compared with a fall of 5·79 inches on 51 days in the first quarter of 1893.

RAINFALL at 40 Fitzwilliam-square, West, Dublin, during each Quarter of the Twenty-nine Years, 1865-93, with averages for the six years, 1865-70; the decennial periods 1871-80 and 1881-90, respectively; and the three years, 1891-93 inclusive.

| Year                     | RAINFALL IN INCHES. |                |               |                |                  |                   |            |
|--------------------------|---------------------|----------------|---------------|----------------|------------------|-------------------|------------|
|                          | First Quarter       | Second Quarter | Third Quarter | Fourth Quarter | First Six Months | First Nine Months | Whole Year |
| 1865                     | 5·690               | 5·440          | 7·084         | 9·248          | 11·130           | 18·214            | 27·462     |
| 6                        | 7·581               | 7·497          | 5·919         | 4·882          | 15·078           | 20·997            | 25·879     |
| 7                        | 9·867               | 6·103          | 6·394         | 4·877          | 15·970           | 22·364            | 27·241     |
| 8                        | 5·516               | 3·498          | 8·170         | 7·751          | 9·014            | 17·184            | 24·935     |
| 9                        | 7·952               | 7·595          | 6·255         | 5·657          | 15·547           | 21·902            | 27·559     |
| 1870                     | 5·576               | 2·791          | 3·687         | 8·805          | 8·367            | 12·054            | 20·859     |
| 6 years' }<br>Average }  | 7·030               | 5·504          | 6·252         | 6·870          | 12·534           | 18·786            | 25·656     |
| 1871                     | 5·087               | 5·805          | 9·504         | 4·972          | 10·892           | 20·396            | 25·368     |
| 2                        | 7·840               | 8·095          | 7·864         | 11·767         | 15·935           | 23·799            | 35·566     |
| 3                        | 5·966               | 2·344          | 9·720         | 5·790          | 8·310            | 18·030            | 23·820     |
| 4                        | 5·655               | 3·467          | 9·170         | 8·894          | 9·122            | 18·292            | 27·186     |
| 5                        | 5·658               | 5·068          | 7·814         | 11·410         | 10·726           | 18·540            | 29·950     |
| 6                        | 5·576               | 4·659          | 6·743         | 15·685         | 10·235           | 16·978            | 32·663     |
| 7                        | 8·623               | 7·971          | 8·631         | 6·921          | 16·594           | 25·225            | 32·146     |
| 8                        | 4·290               | 11·948         | 6·975         | 5·049          | 16·238           | 23·213            | 28·262     |
| 9                        | 7·247               | 8·091          | 9·937         | 3·583          | 15·338           | 25·275            | 28·858     |
| 1880                     | 6·273               | 4·845          | 9·549         | 13·845         | 11·118           | 20·667            | 34·512     |
| 10 years' }<br>Average } | 6·222               | 6·229          | 8·591         | 8·791          | 12·451           | 21·042            | 29·833     |
| 1881                     | 6·133               | 5·527          | 8·201         | 7·172          | 11·660           | 19·861            | 27·033     |
| 2                        | 5·598               | 7·443          | 8·213         | 9·930          | 13·041           | 21·254            | 31·184     |
| 3                        | 7·487               | 6·162          | 9·166         | 6·536          | 13·649           | 22·815            | 29·351     |
| 4                        | 7·734               | 4·138          | 4·341         | 4·254          | 11·872           | 16·213            | 20·467     |
| 5                        | 5·959               | 6·949          | 7·066         | 6·640          | 12·908           | 19·974            | 26·614     |
| 6                        | 7·290               | 8·289          | 5·696         | 11·691         | 15·579           | 21·275            | 32·966     |
| 7                        | 3·842               | 2·899          | 4·227         | 5·633          | 6·741            | 10·968            | 16·601     |
| 8                        | 6·097               | 6·016          | 5·879         | 10·687         | 12·113           | 17·992            | 28·679     |
| 9                        | 5·738               | 4·838          | 9·360         | 7·336          | 10·576           | 19·936            | 27·272     |
| 1890                     | 7·470               | 5·943          | 7·442         | 6·707          | 13·413           | 20·855            | 27·562     |
| 10 years' }<br>Average } | 6·335               | 5·820          | 6·959         | 7·659          | 12·155           | 19·114            | 26·773     |
| 1891                     | 1·650               | 7·098          | 9·272         | 9·800          | 8·748            | 18·020            | 27·820     |
| 2                        | 4·808               | 6·962          | 8·140         | 5·734          | 11·770           | 19·910            | 25·644     |
| 3                        | 5·196               | 4·423          | 5·484         | 5·385          | 9·624            | 15·108            | 20·493     |
| 3 years' }<br>Average }  | 3·885               | 6·163          | 7·632         | 6·973          | 10·048           | 17·680            | 24·653     |

<sup>a</sup> The rain gauge was at 7 South Anne-street, Dublin, until October 28th, 1867.

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## PERISCOPE.

### ELECTRICITY FOR GOITRE.

IN the *American Practitioner and News*, Dr. J. L. Howard, of Louisville, prints a paper advocating the use of iodine carried into the gland by the electric current. "Painting the swelling with iodine," he says, "does little else but discolor or blister the skin. The injection of iodine into the gland is dangerous, but by the use of the galvanic current in carrying directly into the substance of the gland we have a treatment absolutely harmless, free from pain, theoretically scientific, and practically effectual." "It has been demonstrated by a simple test that iodine is actually driven through the tissues by an electric current. If the positive electrode of a galvanic battery saturated with an iodine solution is placed on one part of the body, and the negative electrode containing starch is applied some distance away, the blue reaction of the iodine upon the starch is obtained so soon as the circuit is closed." In 18 months this treatment had been applied to 16 cases. Five—all improving—were still under treatment, seven had been discharged cured, four were lost sight of.

### SYMPHYSEOTOMY.

THE *Montreal Medical Journal* quotes the following results of 124 cases of symphyseotomy, from Varnier, in the *Annales de Gynécologie et Obst.*:—Mothers—112 recovered, 12 died. Children—92 lived, 32 died. Of the mothers, 1 died of septicæmia, 1 of sphacelus of the vagina and vulva, 1 of cellulitis and peritonitis due to use of a saw and to forcible introduction of hand and arm, 1 of hæmorrhage and shock following operation.

### TUBERCULOUS PLEURISY.

J. H. MUSSER contributes notes on six cases of tuberculous pleurisy. Some of the different modes of onset are given:—1. By a series of acute attacks. 2. Acute bilateral pleurisy with effusion. 3. It may develop insidiously, or secondary to general tuberculosis. He distinguishes tuberculous pleurisy from pulmonary tuberculosis by the amount of pleuro-pulmonic invasion, by the age, absence of extreme hectic and extreme emaciation, by the character of the sputum and absence of bacilli, by the unproductive cough, extreme chest pain and chest deformity. The writer considers that "It is always cheering to make out a tuberculous pleurisy when in the midst of much pulmonary tuberculosis. First, the probability of a cure is very much greater than in other forms of tuberculosis. Second, a partial cure can be promised in many cases. Then the progress is slow, and hence the duration of life much greater

than in pulmonary tuberculosis. The symptoms of the terminal stage are, however, more distressing. The dyspnœa, the breast pang and chest constriction, the internal sensations of dragging or pulling, as upon organs, are agonising to witness. The harassing cough is most weakening to the patient. Tuberculous peritonitis, of sluggish type, adds to the severity of the terminal symptoms."—*International Medical Magazine*, February, 1894.

#### WHEN TO OPERATE FOR SQUINT.

E. JACKSON (*International Medical Magazine*, February, 1894), in a careful consideration of the question of operations for strabismus, makes the following points: No operation should be done so long as other methods of treatment offer any chance of relief. The slow development of co-ordinating power in some children, and the possibilities of change by future development should prevent early operative interference; and, as a rule, therefore, operation should not be undertaken before the age of five or six years, and at that age complete correction by operation should rarely be attempted. At puberty complete correction of the squint by operation should be undertaken where it has been completely corrected or is of low degree. In adult life the existing indications govern the operation. In cases of squint due to ametropia the latter should be corrected before operation is attempted.

#### SURGERY OF THE TRIFACIAL NERVE.

H. REINEKING, M.D. (*International Medical Magazine*, February, 1894), after briefly reviewing the literature of this subject, and considering some of the important modifications as made by Carnochen, Thiersch, Heuter, Koenig, Leucke, and Mussbaum, refers more especially to the removal of the Gasserian ganglion and to intercranial neurectomy as practised in the last three years by Horsley, Andrews, Rose, Hartley, and others. He then reports a case, a summary of which is as follows:—J. B. M., a farmer, sixty-three years of age, gives a history of pain in the right supra-orbital region for ten years, and in the right infra-orbital and right occipital regions for five or six years. Within the last two or three years the pain has extended to the upper molar teeth. It generally starts in the frontal region and is never first in the occipital. It is accompanied by twitching of the muscles of the parts affected. The case is one of very severe chronic intractable neuralgia of some of the branches of the ophthalmic and superior maxillary divisions of the trifacial nerve, accompanied by less severe but equally obstinate neuralgia in the region of the great occipital nerve. Neurectomy of the frontal and infra-orbital nerves was decided upon, and the following operation was made: the supra-orbital nerve was exposed at its point of emergence from the supra-orbital foramen, liberated by chiselling away a small



portion of the ridge, and separated as far back in the orbit as possible. By traction, twisting, and a little dissection of the nerves, nearly all of the orbital portion and its branches were removed. The infra-orbital was exposed by removal of the roof of the infra-orbital canal, and grasped and twisted off in the same manner as before. A small opening into the antrum of Highmore was accidentally made, and was drained for three or four days. The wound healed by first intention, and all pain disappeared in about three days. The points in the treatment on which the writer would lay especial stress are—1. Thorough following up, extracting, and dissecting out of the peripheral, muscular, and cutaneous branches. 2. Slow torsion, and gentle stretching of the central stump until it gives away.

#### CONGENITAL BRANCHIAL ANOMALIES.

RUDOLPH MATAS, M.D., describes (*Medical News*, Philadelphia, LXIII., 23) a number of cases where imperfect obliteration of embryonic branchial structure led to congenital anomalies. These took the form of fistula from patency of a branchial cleft or of the precervical sinus of His, and of chondromatous or bony formations from permanence of some parts of the branchial arches which normally disappear before birth. Some of the cases are illustrated.

#### OXYGEN IN CARBONIC ACID POISONING.

W. E. THOMSON, M.D., reports (*Glasgow Medical Journal*, December, 1893, and January, 1894) experiments in the use of air and of oxygen in carbonic acid poisoning, with the following summarised conclusions:—1. In the case of rabbits asphyxiated slowly or rapidly, oxygen is of no greater service than air. 2. Pure oxygen, when inhaled by a healthy man for five minutes, produces no appreciable effect either on the respiratory rate and volume, or on the pulse rate and volume. 3. An animal may be placed in a chamber containing 50 per cent.  $\text{CO}_2$ , and retained there a long time without the supervention of muscular collapse, provided a gentle stream of a respirable gas—air or oxygen indifferently—be allowed to play on the nostrils and agitate the surrounding atmosphere.

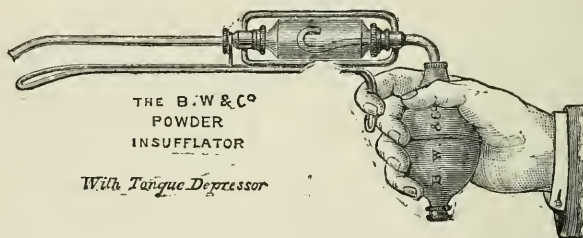
#### GROWTH OF FINGER-NAILS.

DR. A. L. BENEDICT reports (*Medical News*, Philadelphia, LXIII., 19) measurements of weight of finger-nails and rapidity of growth. The parings of seven months weighed (when allowed a couple of years' drying) 1.56 grams. This is at the rate of about 2.64 grams per annum. This would be about 230 grams in a lifetime of 90 years. The rate of growth he found to be 43.2 millimetres per annum, or 3.88 metres in a lifetime of 90 years.

## NEW PREPARATIONS AND SCIENTIFIC INVENTIONS.

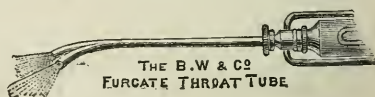
### *Powder Insufflator.*

Messrs. Burroughs, Wellcome, and Company, of Snow Hill Buildings, London, E.C., have recently patented an ingenious and neat little instrument for the application of dry powders by insufflation to the mucous membranes of the nose and mouth, as well as to sores, ulcers, or abscesses affecting the outer skin. The great merit of this apparatus is that, by a system of interchangeable powder cylinders, it allows the substitution of one powder for another without loss of time and in a cleanly manner. The apparatus consists of an oval rubber bulb, about as large as a hen's egg, fitted with an air valve enclosed in a metallic valve box. From the rubber bulb the air is driven by compression of the bulb, through a curve-plated tube into the powder cylinder, which is made of celluloid and is supported by a plated cradle. This powder cylinder having been charged, by means of a wooden funnel, with the powder intended for insufflation, is placed in position by removing a screw cap, and by pressing its small end against a spring inside the mount at the bulb end of the cradle. The neck of the cylinder may then be adjusted to the opposite mount, to which also finally a delivery tube, which may be straight, curved, or furcate, is fastened.



As will be seen from the sketch, the method of handling the insufflator is natural and easy, so that the operator is enabled both to hold the instrument and to bring about delivery of the powder with one hand, thus leaving the other hand free—a very appreciable advantage. Again, each instrument is provided with two forms of delivery tube (one straight and the other curved), which are easily and quickly exchangeable. A very effective attachment for depressing the tongue completes the instrument.

In accordance with a suggestion from a London physician, the patentees have introduced an improved tube, having a furcate end, the advantage of which will be at once obvious to medical practitioners, the insufflation being delivered in two nebulae proceeding at an acute angle.



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*British Medical Journal*, Jan. 13th, 1894.

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“The title sufficiently describes this preparation, and our examination confirms the description.

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|   |                         |    |           |
|---|-------------------------|----|-----------|
| R | Liquor Carnis (Caffyn)  | .. | 66 parts. |
|   | Cocoa Essence (Cadbury) | .. | 10   ”    |
|   | Ext. Malti.             | .. | 24   ”    |
|   | Misce. sec. art.        | .. | ..   ”    |

ANALYSIS by “The Lancet” Chemists:  
“Analysis showed—mineral matter, 3.50 per cent. (rich in soluble phosphates); total solid matter, dried at 100° C., 60.28 per cent. Nutrients and stimulating elements like these are rarely found combined in so satisfactory a manner.”—*The Lancet*.

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In this preparation advantage has been taken of the solubility of Pepsine in Glycerine to produce a convenient and desirable *liquid form* of this valuable medicine; whilst the preservative qualities of the menstruum confer upon the Acid Glycerine of Pepsine the property of keeping for any length of time.

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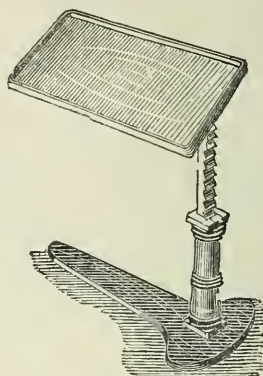
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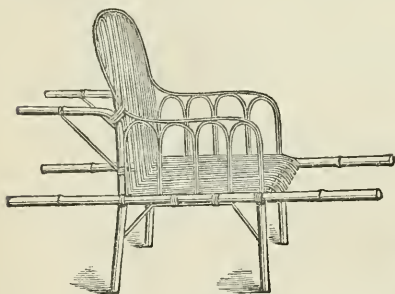
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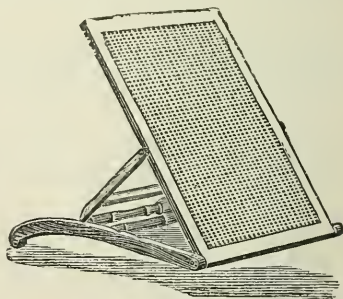
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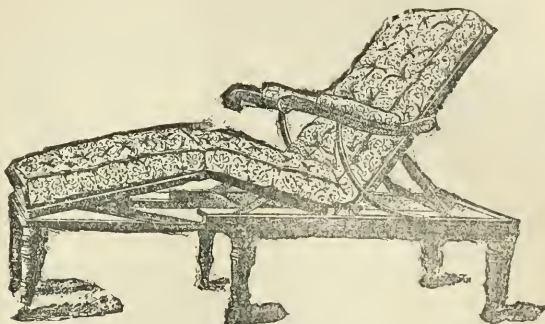
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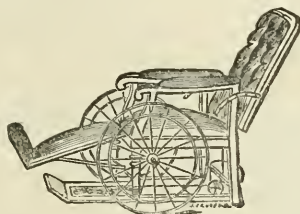
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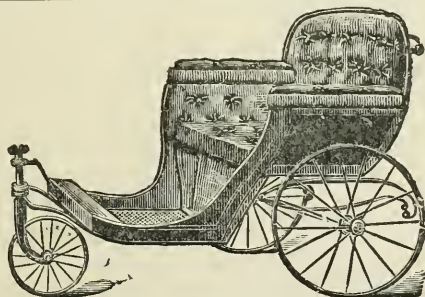
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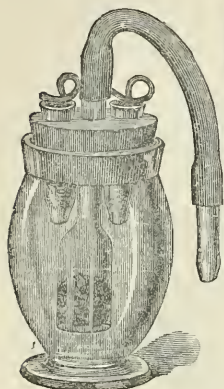
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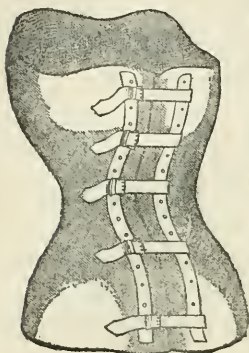
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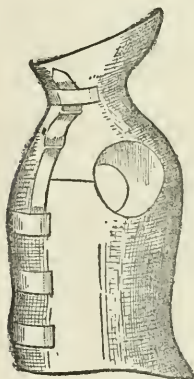
„ waist.

„ hips.

Length from axilla to great trochanter.

In severe angular cases circumference over apex of curve, position of same, and contour should be given; in lateral cases a description of the case.

In all cases it should be stated if for male or female.



### **CERVICAL JACKET.**

Same measurements required, and circumference at neck, and length from neck to axilla.

Any part of the Jacket can in the process of Manufacture be left Soft.



### **CLUB FOOT.**

Circumference below knee.

„ ankle.

„ heel and instep.

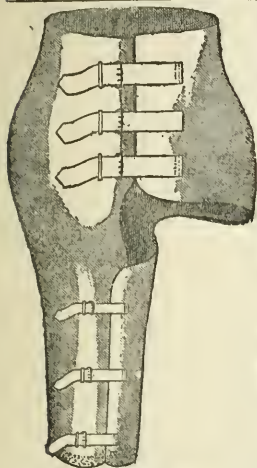
Length from below knee to ground.

„ of foot.

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## Instructions for Measurement, &c.

### HIP SPLINT.

Circumference at waist.

" hips.

" thigh, top of

" above knee.

Length from waist to groin.

State if for right or left side.



### LEG SPLINT.

Circumference at top of thigh.

" above knee.

" at knee.

" below knee.

" calf.

" ankle.

Length from groin to centre of knee.

" centre of knee to ankle.

State if for right or left leg.

When the foot-part is required, also circumference of heel and instep, and length from centre of knee to ground.

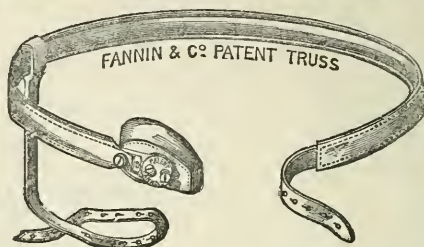
If the limb is contracted the contour should be given.

Splints are also made in Poroplastic for fracture of Inferior Maxilla, Humerus, Elbow-Joint, Forearm, Thigh, Knee-Joint, Leg, Shoulder Joint, Hand, &c.

These Splints can be fitted perfectly to the Patient if softened either by hot water or in a Heater made for the purpose. When mounted with rubber, hot water will do; if with leather, a Heater should be used. The material becomes quite hard again in two or three minutes.

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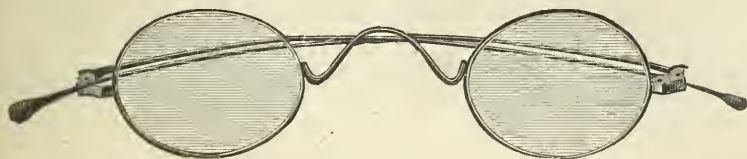
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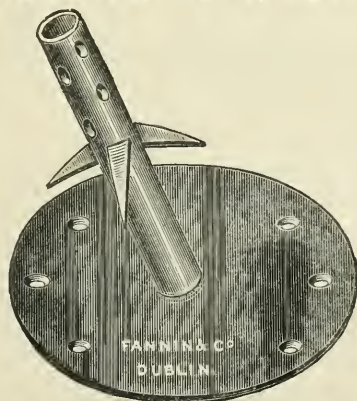
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| <b>OFFICIAL FORMULÆ.</b>                   |                                  |                 |       |       |       |       |       |                               |                                |                               |       |       |       |    |    |
| 1                                          | PIL. ALOES BARB., - - -          | 0               | 7½    | 0     | 6½    | 0     | 5½    | <b>Cascara Sagrada Ext.</b>   |                                |                               |       |       |       |    |    |
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| 8                                          | " COLOCYNTH CO., - - -           | 0               | 11    | 0     | 10    | 0     | 9     | <b>Ergotin.</b>               |                                |                               |       |       |       |    |    |
| 9                                          | " COLOCYNTH ET HYOS., - -        | 1               | 0     | 0     | 11    | 0     | 10    | 98                            | ERGOTIN,                       | }                             | 1     | 2     | 1     |    |    |
| 11                                         | " FERRI CARB., - - -             | 0               | 7     | 0     | 6     | 0     | 5     | Ferri Sulph. Exsic.           |                                |                               | 1     | 1     | 1     |    |    |
| 13                                         | " HYDRARG., - - -                | 0               | 7½    | 0     | 6½    | 0     | 5½    | Ext. Hellebor.                |                                |                               | 1     | 0     |       |    |    |
| 17                                         | " RHEI CO., - - -                | 0               | 7½    | 0     | 6½    | 0     | 5½    | " Aloes Soc., aa. gr. i.      |                                |                               |       |       |       |    |    |
|                                            |                                  |                 |       |       |       |       |       | Ol. Sabinæ, gtt. ss.          |                                |                               |       |       |       |    |    |
| <b>Antibilious.</b>                        |                                  |                 |       |       |       |       |       |                               |                                |                               |       |       |       |    |    |
| 29                                         | PIL. HYDRARG., gr. i.            | }               | 1     | 0     | 0     | 11    | 0     | 10                            | <b>Opium, Pulv.</b>            |                               |       |       |       |    |    |
| Ext. Coloc. Co., gr. ij.                   |                                  |                 |       |       |       |       |       | 981                           | PULV. OPII, gr. ¼              | -                             | 0     | 7     | 0     | 8  |    |
| Hyoscy., gr. i.                            |                                  |                 |       |       |       |       |       | 162                           | PULV. OPII, gr. ss.            | -                             | 0     | 10    | 0     | 9  |    |
| 30                                         | PIL. HYDRARG., gr. i.            | }               | 0     | 8     | 0     | 7     | 0     | 6                             | 163                            | PULV. OPII, gr. i.            | -     | 0     | 11    | 0  | 10 |
| " Rhei Co., gr. iv.                        |                                  |                 |       |       |       |       |       | 988                           | PULV. OPII, gr. ij.            | -                             | 1     | 2     | 1     | 1  |    |
| <b>Tonic Pills.</b>                        |                                  |                 |       |       |       |       |       |                               |                                |                               |       |       |       |    |    |
| 109                                        | PIL. FERRI (BLAUD), gr. iv. & v. | 0               | 6½    | 0     | 5½    | 0     | 4½    | <b>Rhei Pil.</b>              |                                |                               |       |       |       |    |    |
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| Zinci Valer                                |                                  |                 |       |       |       |       |       |                               | <b>Rhei Pulv.</b>              |                               |       |       |       |    |    |
| Ferri Valer, aa. gr. i.                    |                                  |                 |       |       |       |       |       | 217                           | PULV. RHEI.                    |                               |       |       |       |    |    |
|                                            |                                  |                 |       |       |       |       |       | Potass. Sulph., aa. gr. iiss. | }                              | 0                             | 8     | 0     | 7     |    |    |
|                                            |                                  |                 |       |       |       |       |       | Pulv. Sapo. Hyss., gr. ss.    |                                |                               |       |       |       |    |    |
|                                            |                                  |                 |       |       |       |       |       | Ol. Ricini, m gr. ss.         |                                |                               |       |       |       |    |    |
|                                            |                                  |                 |       |       |       |       |       | " Croton, m gr. 1-16th        |                                |                               |       |       |       |    |    |
| <b>Aperient Pills.</b>                     |                                  |                 |       |       |       |       |       |                               |                                |                               |       |       |       |    |    |
| 5                                          | EXT. ALOES AQUOSUM, gr. xx.      |                 |       |       |       |       |       | <b>THE "LITTLE" PILL.</b>     |                                |                               |       |       |       |    |    |
| Pulv. Cambogiæ, gr. iv.                    |                                  |                 |       |       |       |       |       | <b>"Little" Antibilious.</b>  |                                |                               |       |       |       |    |    |
| " Jalapæ, gr. viij                         |                                  |                 |       |       |       |       |       | 400                           | JALAPIN, gr. 1-16th            | }                             | 0     | 7     | 0     | 6  |    |
| " Colocynth, gr. vi.                       |                                  | 0               | 9     | 0     | 8     | 0     | 7     | Aloin, gr. 1-8th              |                                |                               |       |       |       |    |    |
| " Hyd. Subchlor., gr. iv.                  |                                  |                 |       |       |       |       |       | Leptandrin, gr. 1-16th        |                                |                               |       |       |       |    |    |
| " Sapo. Hyssan., gr. iv.                   |                                  |                 |       |       |       |       |       | Podophyllin, gr. 1-8th        |                                |                               |       |       |       |    |    |
| Gingerin, gr. ij.                          |                                  |                 |       |       |       |       |       | Pulv. Cambog., gr. 1-32nd     |                                |                               |       |       |       |    |    |
| Ft. Pil. xij.                              |                                  |                 |       |       |       |       |       | Ext. Hyoscy., gr. 1-8th       |                                |                               |       |       |       |    |    |
| Each Pill contains Calomel, ½ gr.          |                                  |                 |       |       |       |       |       | Capsicine, gr. 1-64th         |                                |                               |       |       |       |    |    |
| 16                                         | As 45, with 1 gr. Calomel        | 0               | 9     | 0     | 8     | 0     | 7     | <b>"Little" Aperient.</b>     |                                |                               |       |       |       |    |    |
| 17                                         | As 45, sine Calomel              | 0               | 9     | 0     | 8     | 0     | 7     | 68                            | ALOIN, gr. 1-10th              | }                             | 0     | 7     | 0     | 6  |    |
| 23                                         | ALOES BARB., gr. iss.            | }               |       |       |       |       |       | Podophyllin, gr. 1-5th        |                                |                               |       |       |       |    |    |
| Jalapæ, gr. i.                             |                                  |                 |       |       |       |       |       | Ext. Hyoscy., gr. 1-20th      |                                |                               |       |       |       |    |    |
| Coloc., gr. i.                             |                                  |                 | 0     | 7     | 0     | 6     | 0     | 5                             | Jalapin, gr. 1-10th            |                               |       |       |       |    |    |
| Cambogiæ, gr. ¼                            |                                  |                 |       |       |       |       |       |                               | Ext. Nuc. Vom.                 |                               |       |       |       |    |    |
| Saponis, gr. ss.                           |                                  |                 |       |       |       |       |       |                               | Capsicine, aa. gr. 1-20th      |                               |       |       |       |    |    |
| Ol. Carui, gtt. 4                          |                                  |                 |       |       |       |       |       | <b>"Little" Cough.</b>        |                                |                               |       |       |       |    |    |
| Do. c. Calomel, gr. ½                      | -                                | 0               | 7     | 0     | 6     | 0     | 5     | <b>"Little" Liver.</b>        |                                |                               |       |       |       |    |    |
| gr. i                                      | -                                | 0               | 7     | 0     | 6     | 0     | 5     | 412                           | MORPH. HYDROCHLOR., gr.        | }                             | 0     | 7     | 0     | 6  |    |
| 361                                        | PIL. APER. (HOSPITAL),           |                 |       |       |       |       |       | 1-36th                        |                                |                               |       |       |       |    |    |
| 3                                          | Ext. Aloes Aq., gr. ij.          |                 |       |       |       |       |       | Pulv. Scillæ                  |                                |                               |       |       |       |    |    |
| Pulv. Cambog., gr. ss.                     |                                  |                 |       |       |       |       |       | Pulv. Ipecac., aa. gr. 1-12th |                                |                               |       |       |       |    |    |
| " Jalap., gr. i.                           |                                  |                 |       |       |       |       |       | Bals. Tolu, gr. 1-4th         |                                |                               |       |       |       |    |    |
| " Colocynth.                               |                                  | 0               | 9     | 0     | 8     | 0     | 7     | <b>"Little" Cathartic.</b>    |                                |                               |       |       |       |    |    |
| Calomel                                    |                                  |                 |       |       |       |       |       | 410                           | PODOPHYLLIN, gr. 1-4th         | }                             | 0     | 7     | 0     | 6  |    |
| Pulv. Saponis, aa. gr. ss.                 |                                  |                 |       |       |       |       |       | Ext. Cascara, gr. 3-4ths      |                                |                               |       |       |       |    |    |
| Ol. M. Pip., m 1-16th                      |                                  |                 |       |       |       |       |       | Capsicine, gr. 1-20th         |                                |                               |       |       |       |    |    |
| " Caryoph., m 1-8th                        |                                  |                 |       |       |       |       |       | <b>"Little" Cathartic.</b>    |                                |                               |       |       |       |    |    |
| <b>Quinæ Sulph., B.P.</b>                  |                                  |                 |       |       |       |       |       |                               |                                |                               |       |       |       |    |    |
| 203                                        | gr. ¼                            | -               | 0     | 10    | 0     | 9     | 0     | 8                             | <b>"Little" Cathartic.</b>     |                               |       |       |       |    |    |
| 204                                        | gr. i.                           | -               | 1     | 0     | 0     | 11    | 0     | 10                            | 298                            | HYDRARG. SUBCHLOR.            | }     | 0     | 10    | 0  | 9  |
| 205                                        | gr. ij.                          | -               | 1     | 2     | 1     | 1     | 1     | 0                             | Jalapin, aa. gr. ss.           |                               |       |       |       |    |    |
| 206                                        | gr. iij.                         | -               | 1     | 5     | 1     | 4     | 1     | 3                             |                                |                               |       |       |       |    |    |

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